Issue 132
PS
1963 Series
THE PREVENTIVE MAINTENANCE MONTHLY
WELCOME TO OUR OUTFIT CONNIE RODD
TM 11-5820-401-10
Will Eisner
SPECIAL ARTICLES
NEW FM SERIES RADIOS
(SEE PAGES 2 AND 40)

You're in favor of streamlined things—like a jet to fly you home on furlough, or a streamlined way to get you a 3-day pass, or a streamlined number you like to see in town on Saturday night.

And, no doubt you'll be in favor of the Army's new streamlined maintenance. That's right—streamlined maintenance. Operation ARM (Army Ready Materiel) made the kick-off on this one.

It cuts down on the amount of maintenance checks and services—but still keeps your equipment ready to fight.

The equipment engineers have been at work to see which checks and services can be reduced. The results are rolling in.

Here are a few examples of what is being done—

On the M7A1-6 Flame Thrower the man-hours for maintenance in a year are being cut from 366 to 271.

The PE-75 Power Unit is going down from 376 to 272 hours.

The SB-86/P Switchboard is dropping from 246 to 180 per year.

And the 8-in towed Howitzer goes from 1370 to 850.

It's being done mainly by reducing the number of daily and weekly checkpoints. On that 8-in howitzer, for example, the dailies are cut from 55 to 11; the weeklies disappear; the monthlies remain at 12.

These will be coming your way as changes or revisions to equipment technical manuals. So, keep an eye out for this new streamlined look in maintenance.

Now you're asking, what does all this mean to me?

Just this—it'll give you time to do the real necessary maintenance—and do it right—when it has to be done. Also, it lets you have more time for other real necessary things like training for the real thing.

At the same time it gives you equipment that's ready—combat ready—just like the motto says: "Army Ready Materiel."

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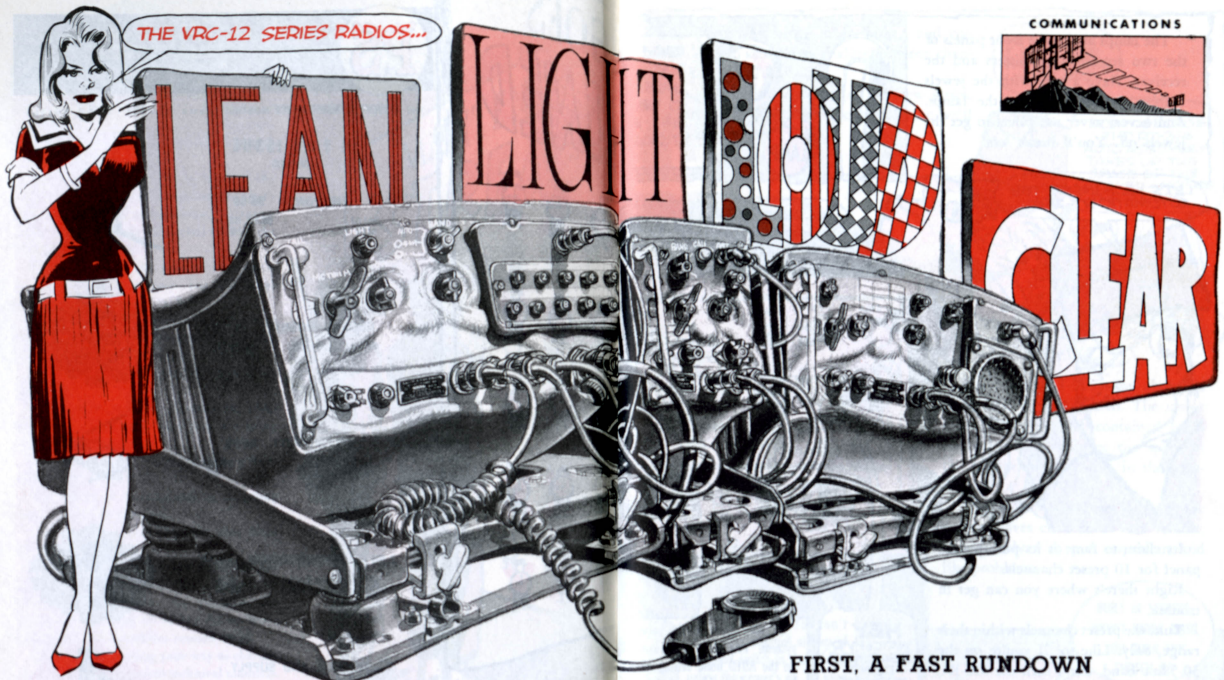
One-seventh the size . . . one-fourth the weight . . . two-and-a-half times the transmission distance . . . and almost three times the number of channels.

That's the way your new AN/VRC-12 series radio sets stack up against the equipment they replace. With three basic components—the automatic RT-246, the manual RT-524 and the R-442—the new series replaces a whole truckload of the AN/GRC-3 thru -8 components.

Let's get a close-up on what makes 'em go, maintenance-wise.



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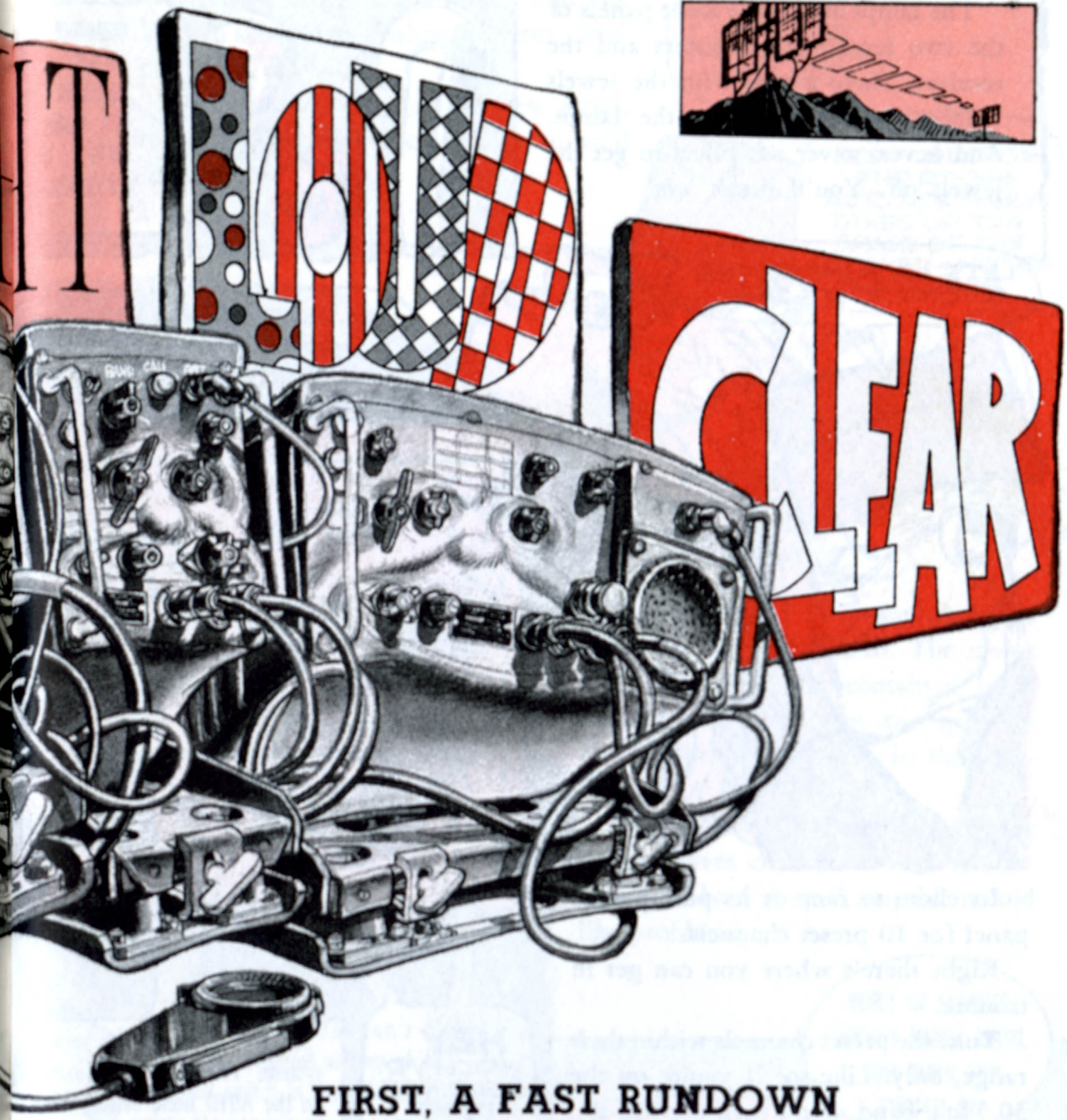
FIRST, A FAST RUNDOWN

You operators can breathe easy. All you've gotta do is replace a coupla' lamps, and you don't even have to carry 'em around. Which is a little better system than carrying around parts and not being able to use 'em . . . like in some of the older equipment.

And don't worry about where your set'll take you. Any of the new series, with their 920 channels, will get you to Infantry, Artillery and Armor. Each set does the job of three of those it replaces.

Your channels are spaced at 50kc, compared to the 100kc spacing on the old Standard B sets.

MORE



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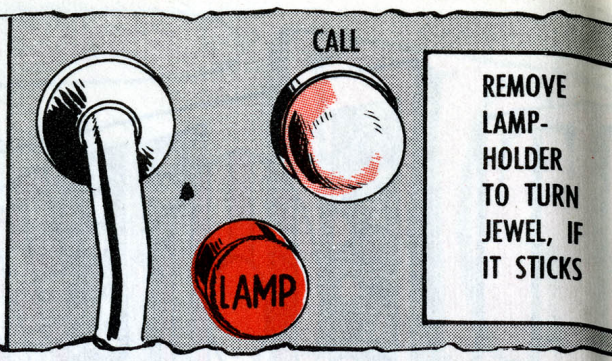
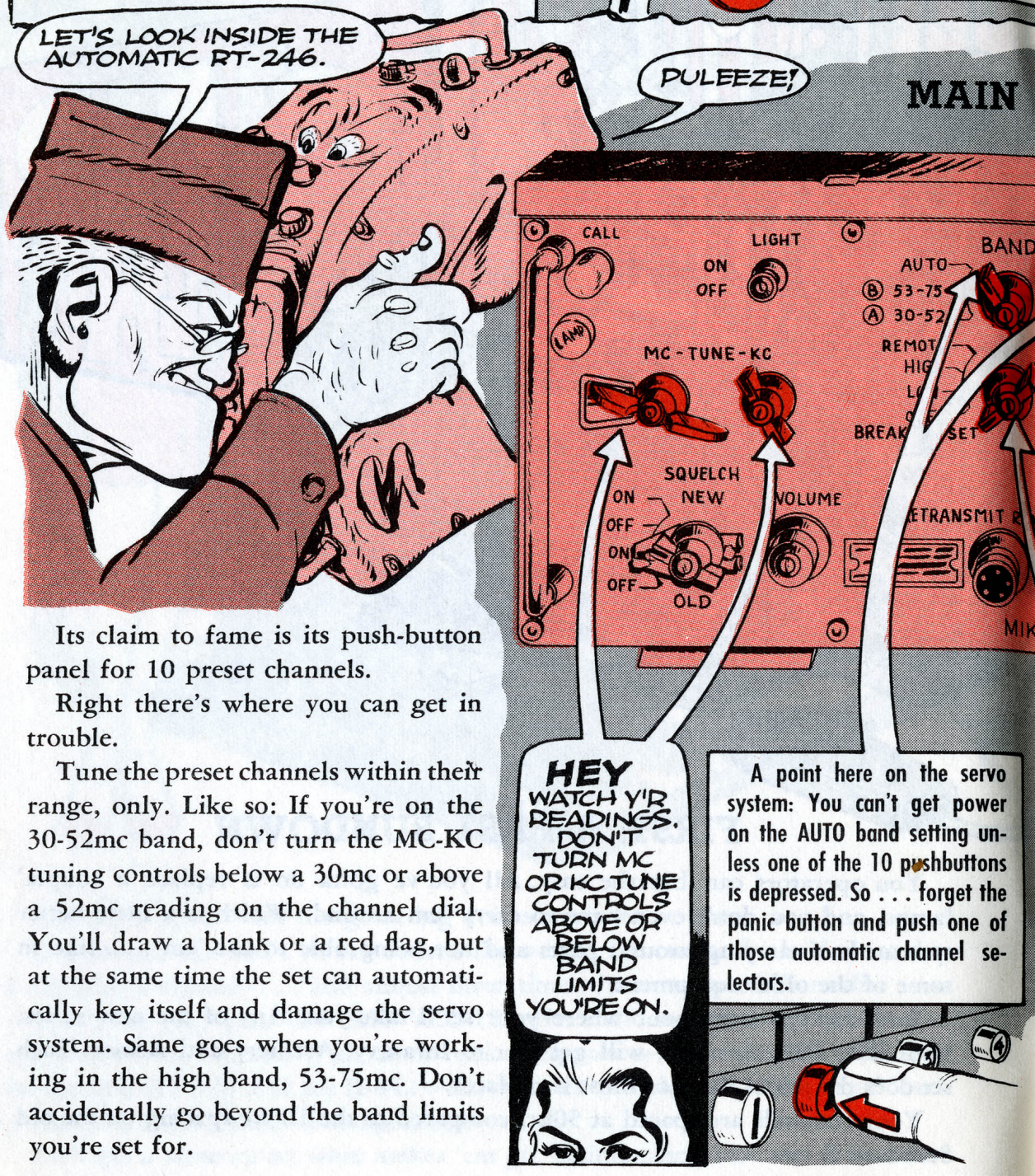
The lamps are on the front panels of the two receiver-transmitters and the receiver. Have a care with the jewels (globes) when replacing the lamps. And never, never use pliers to get the jewels off. You'll break 'em.





Its claim to fame is its push-button panel for 10 preset channels.

Right there's where you can get in trouble.

Tune the preset channels within their range, only. Like so: If you're on the 30-52mc band, don't turn the MC-KC tuning controls below a 30mc or above a 52mc reading on the channel dial. You'll draw a blank or a red flag, but at the same time the set can automatically key itself and damage the servo system. Same goes when you're working in the high band, 53-75mc. Don't accidentally go beyond the band limits you're set for.

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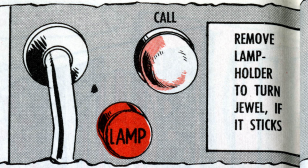

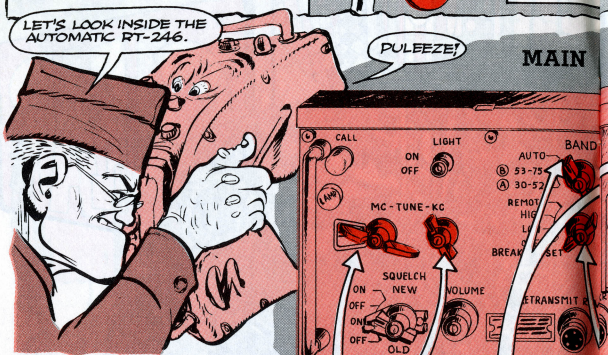

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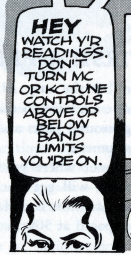


A point here on the servo system: You can't get power on the AUTO band setting unless one of the 10 pushbuttons is depressed. So . . . forget the panic button and push one of those automatic channel selectors.

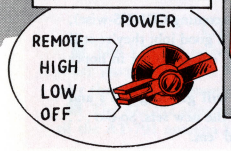
No more calibrating to do, either, and you don't have to sweat over dialing between channels. You can't.

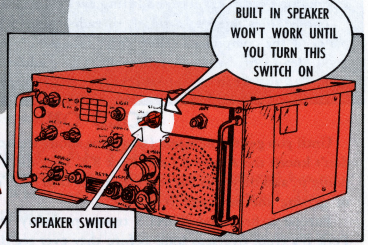
Modules, the workhorses of the new series, are interchangeable with like modules, so we'll get to them later.

The manual RT-524 is just about the same bird as the RT-246. The major difference is the self-contained loudspeaker which occupies the space of the pushbutton assembly in the automatic.

The self-contained speaker of the manual saves extra cords in a vehicle, figurin' where to put a speaker, and like problems.

Another one: You can't change the internal setting of the band switch in the RT-246 unless the power's on . . . even tho the band switch turns on the front panel of the RT.





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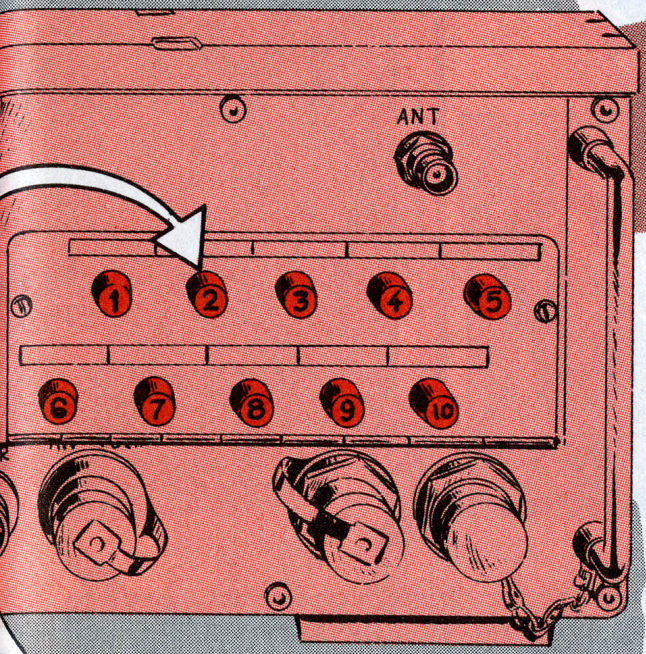

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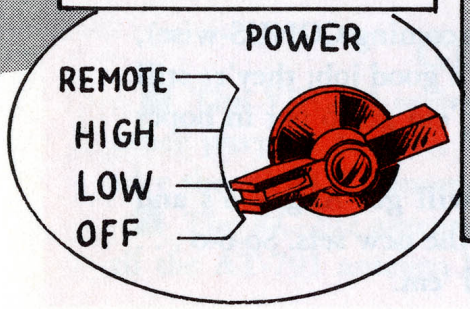
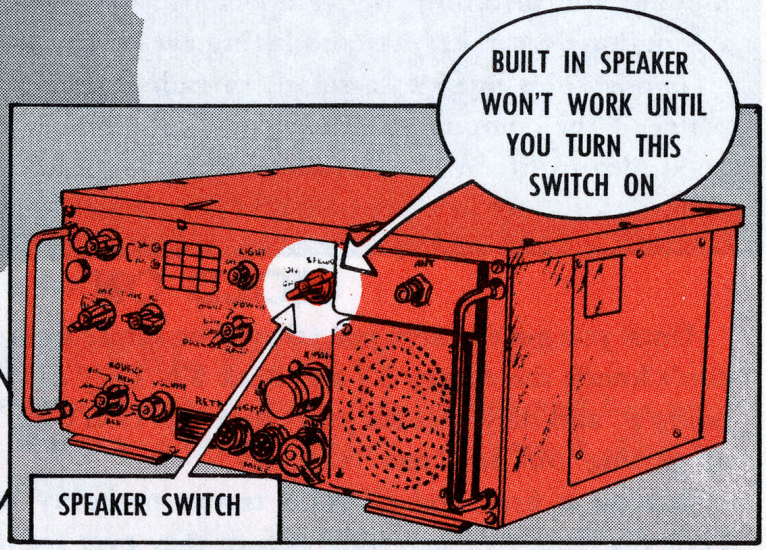
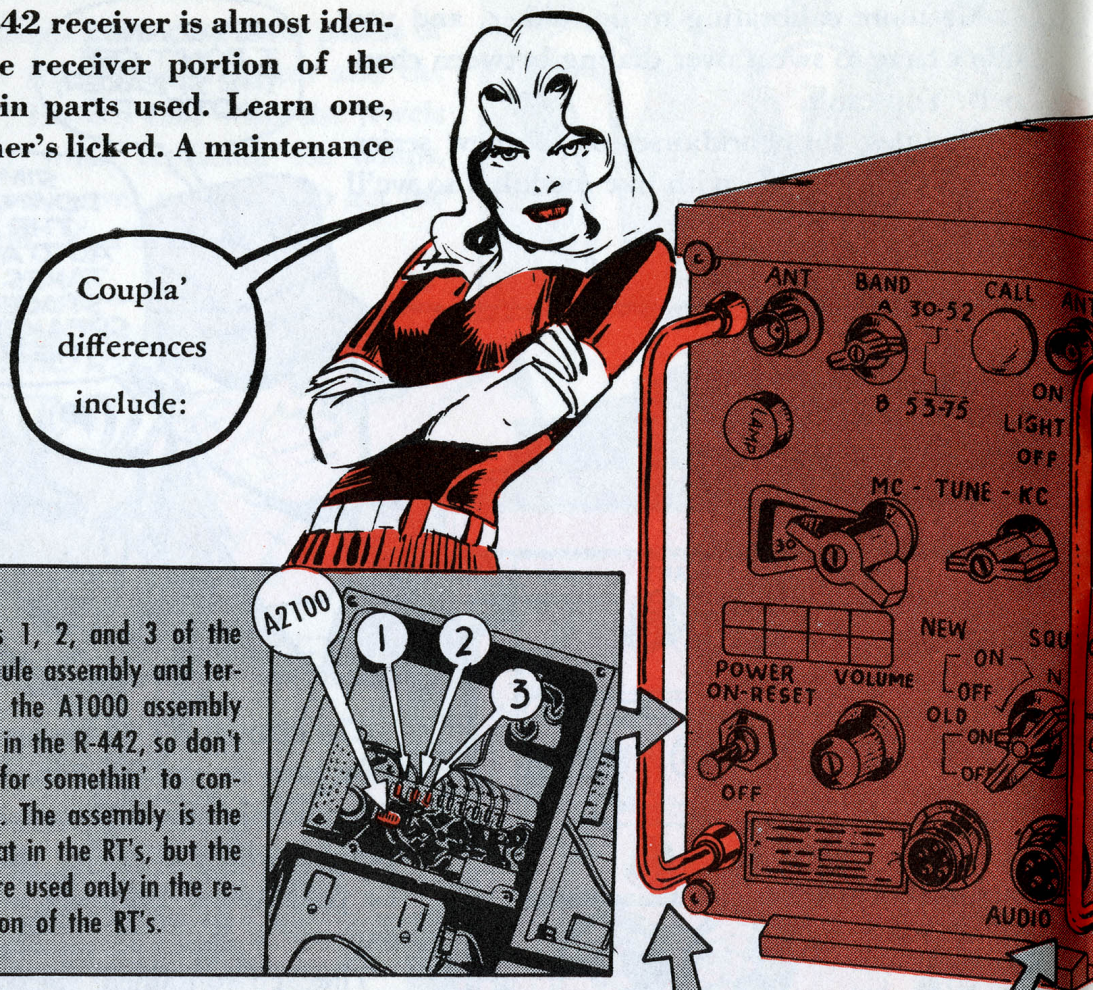




PS MORE

The R-442 receiver is almost identical to the receiver portion of the two RT's—in parts used. Learn one, and the other's licked. A maintenance bonus.



Terminals 1, 2, and 3 of the A2100 module assembly and terminal 3 of the A1000 assembly aren't used in the R-442, so don't go lookin' for somethin' to connect to 'em. The assembly is the same as that in the RT's, but the terminals are used only in the receiver portion of the RT's.

The lift handles on the RT's and auxiliary receiver take the sweat out of removing and installing the components. And they'll serve for a long time, too, if you don't treat 'em like the lifting eyes on a tank.

The handles taper to a small, threaded shaft which goes through the front panel of the component. They don't take kindly to hard yanks, and it's not a good idea to lift by one handle only. You could end up with the handle in your hand and the set in a support echelon repair shop.

HOLD ON

Until you get the new sets (they'll be a long time coming CONUS-wise), don't knock the Angry 3's and Perk 8's. They did a good job; they're still doing it, and they will for years to come. Don't let 'em go to pot in hopes of getting the new sets yesterday.

Europe is first, and CONUS troops probably will get Angry 3's and Perk 8's from overseas long before they ever see the new sets. So-o-o . . . take care of the old standbys. You're gonna need 'em.

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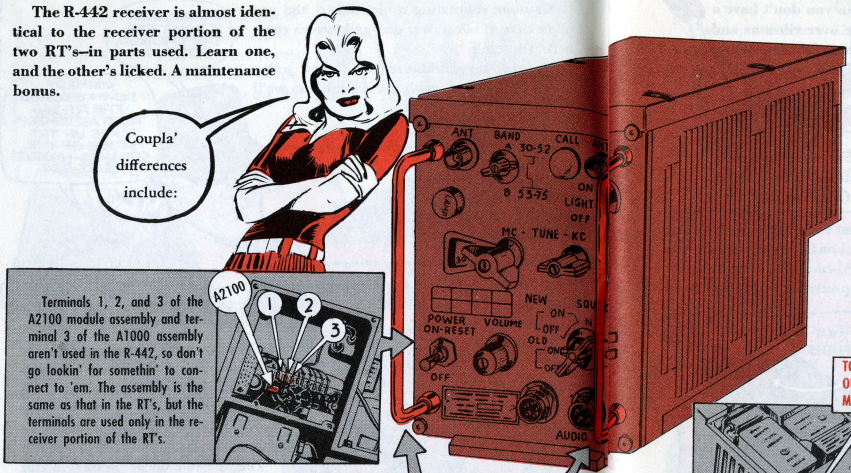

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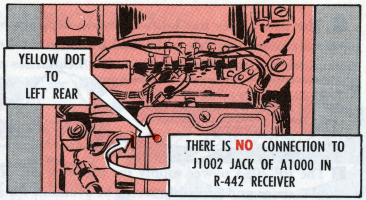
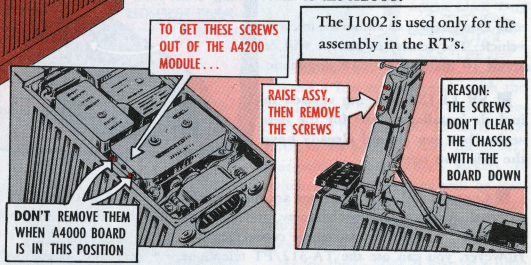


Good point here: The J1002 has a yellow dot above it. You can spot it right away, and the dot's a handy guide when replacing the assembly cover. Keep it to the left rear of the receiver (or receiver portion of the RT's) when replacing the cover. If you put the cover on wrong, you can bend or break the terminals and leads to the A1000.

The J1002 is used only for the assembly in the RT's.

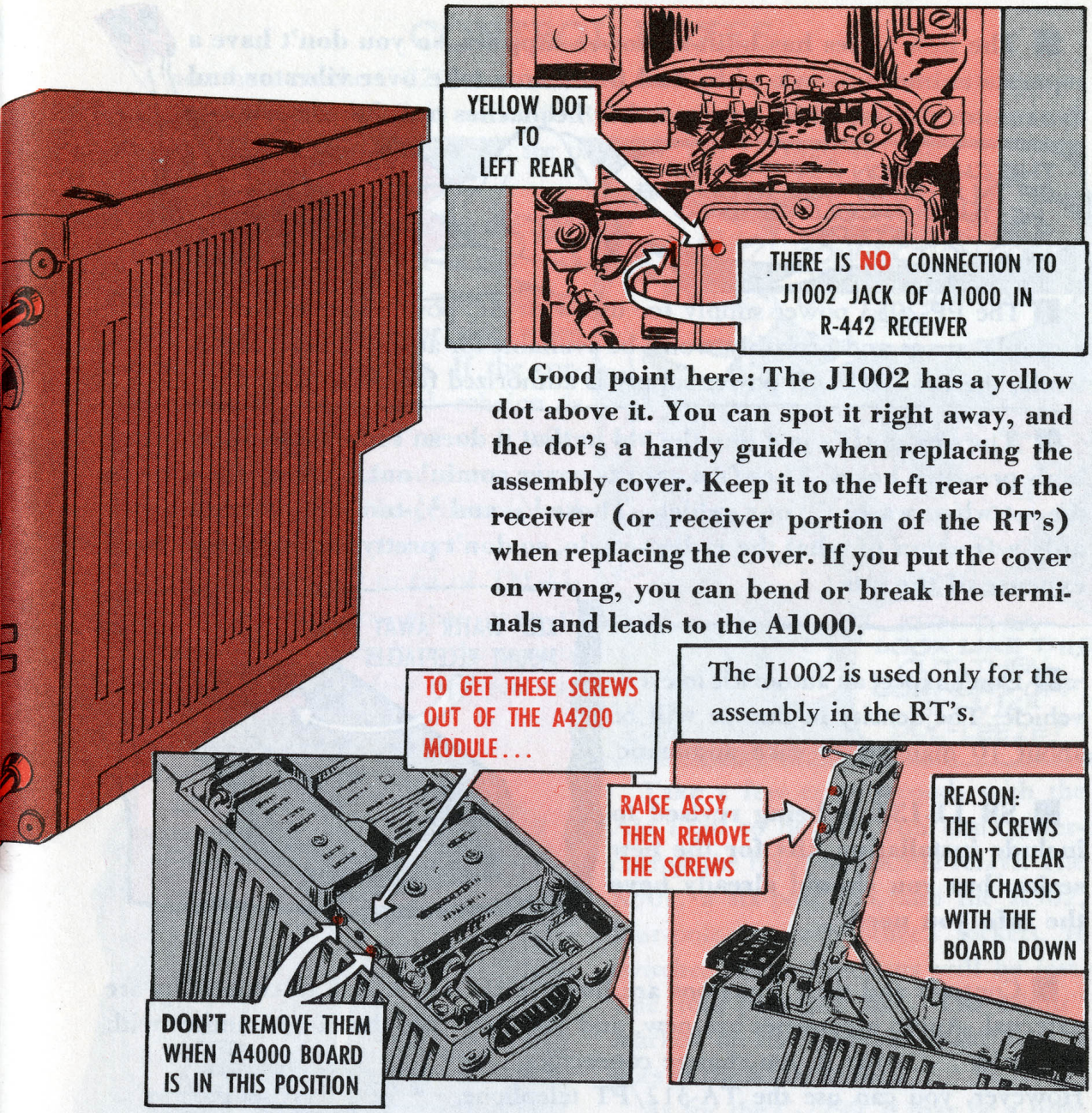


That about covers the peculiarities of the three main components, so far as organizational maintenance goes. Many maintenance points for the three are alike and will be discussed later.

GENERAL POINTS

- **The VRC-12 series was designed for vehicular use and has no other purpose to date. Wheel and track vehicles . . . period. That's why the "VRC" nomenclature.**
- The RC-292 antenna equipment may be used for extended range until the AT-791 antenna becomes available.

MORE



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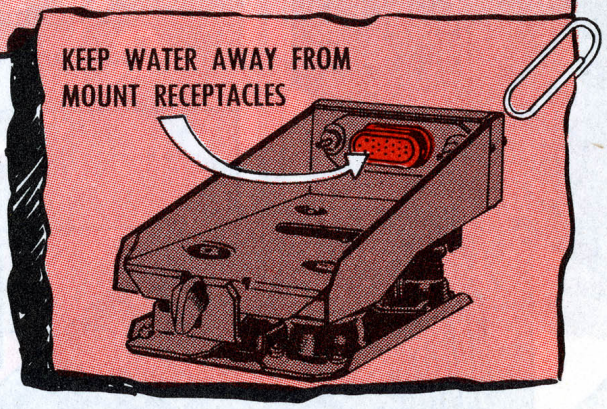
P.S. MORE

■ **The new series has built-in power supplies, so you don't have a separate animal to work with. And transistors take over vibrator and dynamotor duties, which means other headaches out the window.**

■ The PP-2953 power supply for use with AC power sources has hit a coupla' snags and probably won't be available for at least a year. Meanwhile, the PP-1104A/G power supply is authorized for bench use.

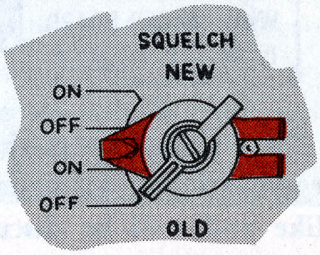
■ **The new stuff's just like the old in that it doesn't like baths from high pressure hoses. There's a canvas cover comin' out, so keep it on the set when washin' your vehicle. Those ¼- and ¾-ton jobs still cost only a fraction of what the radio sets do, so don't pretty 'em up at the expense of the sets.**



■ Don't expect an automatic in every vehicle. The density in Europe will be about 10 manuals to each automatic.

■ **SB 11-131 is being revised to include installation kits for the new series, but you should already have the info you need.**

■ Controls and their functions are listed in the TM's, and all connectors are external. Audio accessories are new, and you can't use the H-33 handset with the series . . . even if you change connectors. However, you can use the TA-312/PT telephone.



■ **The VRC-12 series has licked the old dial lock problem (there're no dial locks). But there's a similar item to watch on the receiver and RT's—the SQUELCH switch. Trying to switch from old to new squelch position without releasing the latch on the control will get you nowhere.**

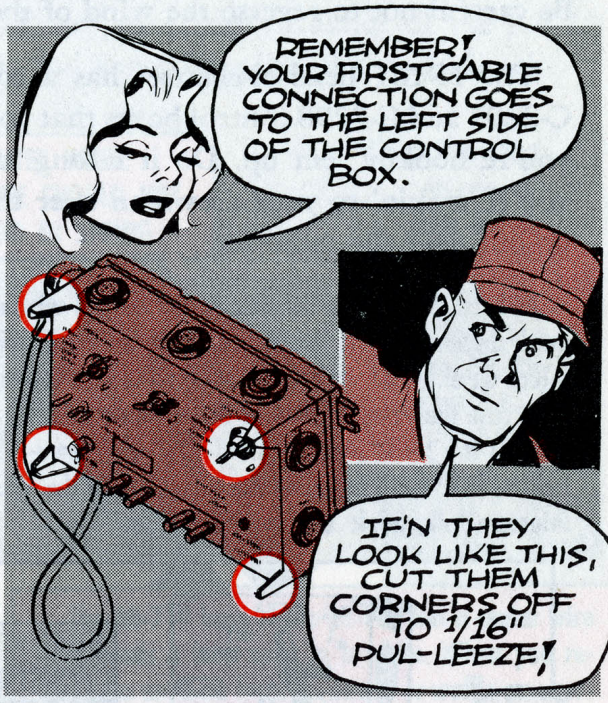
■ Hold it a minute, operator buddy. That guy reading over your shoulder, the organization mechanic, is the guy who has to change the squelch position. And he can change it only after he checks with your Commo Officer or Chief as to whether old or new squelch is the order of the day.

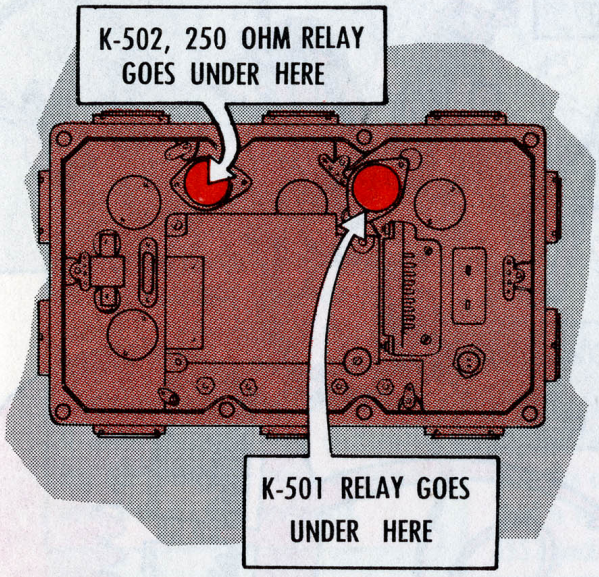
CONTROL BOXES

A note here on the C-2299 control used for remote operation and retransmission control in the VRC-45 and -49. Retransmission channels must be at least 10 megacycles apart. For details, see page 16, TM 11-5820-401-10.

All control boxes, including the AM-1780 amplifier, should get to you with the corners cut off so you won't gouge meat out of your back or side when working in close quarters. If the corners are still on, second echelon is authorized to chop 'em off to 1/16th of an inch (and file those sharp edges round and smooth). New controls will come to you without corners.

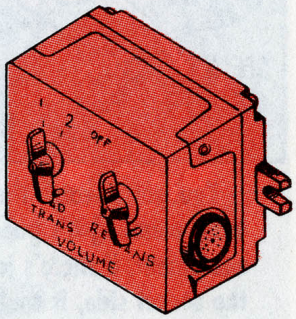
Para 20, pages 60 to 64 of TM 11-5820-401-20 tells you what parts to replace and how to do it in the control boxes, but here're a few tips you can use.





Take a few extra seconds with the AM-1780 to be sure you don't interchange the K501 and K502 relays. The K501, a six-pole job, and the K502, four-pole, fit each other's sockets. If switched, some functions will be lost. The four-pole job has "250 Ohms" marked on its jacket, so make sure it goes in the K502 socket.

As for the C-2299, it may be a little hard to come by—since it was intended only for the retransmission sets.



The control is now authorized for automatic sets in open vehicles . . . which makes for a shortage. Be patient. They're coming.

Bugs were ironed out of the original control boxes, and there should be no maintenance problems worth chinning about.

PS MORE

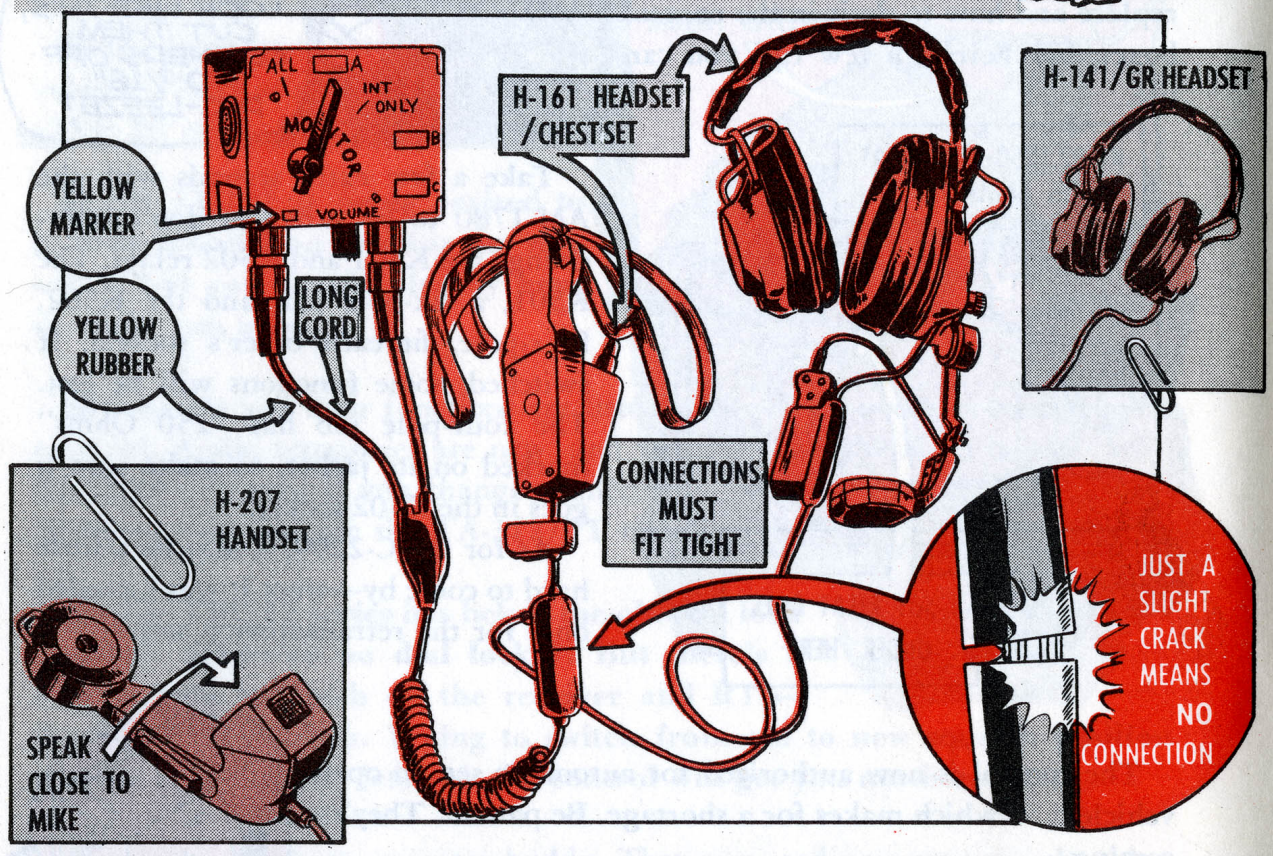
AUDIO ACCESSORIES

Same goes for the new audio accessories. Other than inspection and PM checks for frayed cords and punctured moisture seals, there's little to worry about. When transmitting, keep your mouth close to the mike of the H-207 for best results. Be careful not to reverse the wind of the handset cords.

The H-161 headset-chestset has a color combo with the C-2297 and C-2298 control boxes that you gotta eyeball when you're hookin' 'em up. Do it wrong and that sweet music you're makin' to your crewman over the intercom is gonna go out over the radio set.

To keep the talk in the family, be careful where you hook the two cords that come off the quick disconnect. The longest cord has a yellow strip of rubber around it. Its connector goes to a jack on either of the control boxes. The jack is directly under a strip of yellow paint on the box.

In case the paint's faded or the rubber's missing, the longest cord (about 1¼ inches longer) goes to the J-903 jack on the C-2297 and the J-803 jack on the C-2298. The connectors of the two cords fit both jacks, on the underside of the boxes. So if you don't wanna transmit your intercom talk, hook 'em up right.



You gotta watch the quick disconnect on the H-161. The plug and socket come apart real easy, meaning it's good practice to press 'em together once in a while when you're using the equipment. If there's just a slight crack between the rubber of the plug side and the rubber of the socket side, it could mean you don't have a connection.

The quick-disconnect's supposed to part with a slight tug . . . so's it won't yank off your head, f'rinstance.

If you do snag the cords check quick-like to see if you've parted the connection.

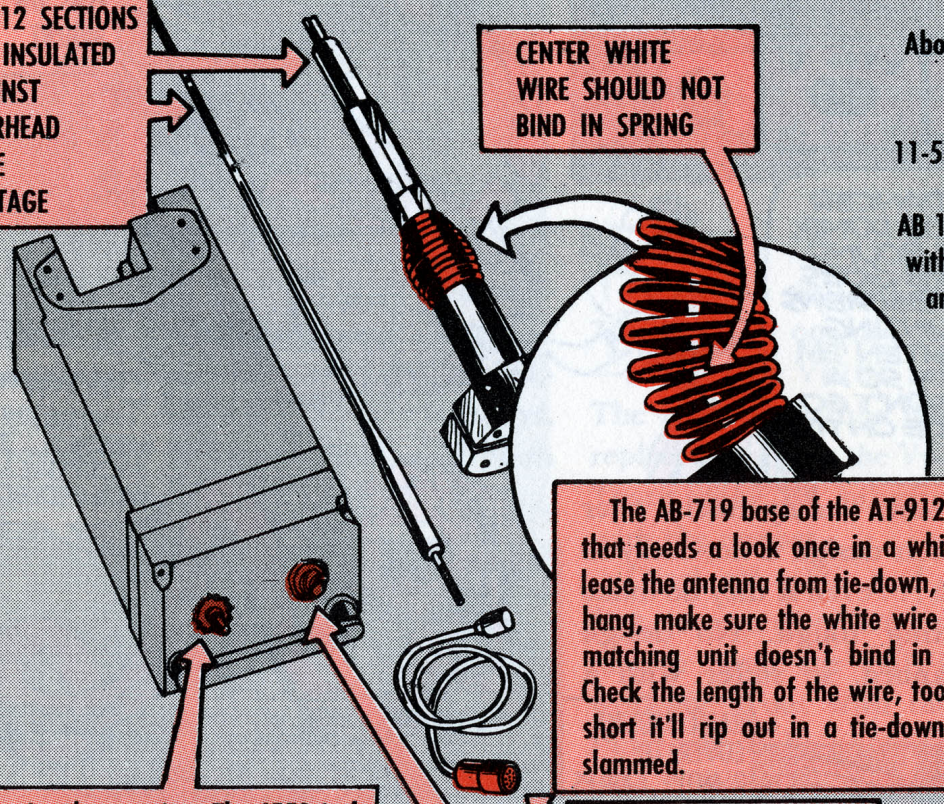
ANTENNAS

Antennas: Same old story here. Hold the paint (the insulator of the AB-15 receiver antenna base doesn't get any), and keep the joints clean and bright.

AT-912 SECTIONS ARE INSULATED AGAINST OVERHEAD WIRE VOLTAGE

CENTER WHITE WIRE SHOULD NOT BIND IN SPRING

About that chart on page 5, para 6a, TM 11-5820-401-10: You get one AB 15 Mast Base with the VRC-44 and VRC-48— not two.



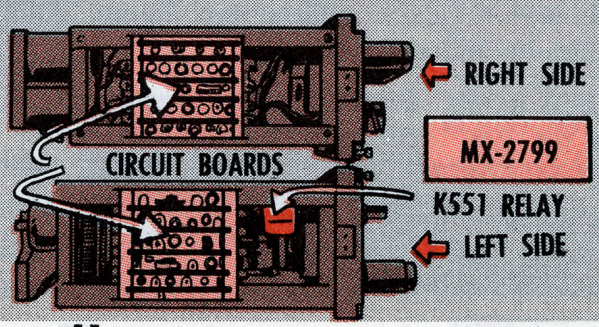
The AB-719 base of the AT-912 has a center wire that needs a look once in a while. When you release the antenna from tie-down, or waffle an overhang, make sure the white wire that leads to the matching unit doesn't bind in the base spring. Check the length of the wire, too, cause if it's too short it'll rip out in a tie-down or when it gets slammed.

FEMALE END GOES TO ANTENNA MATCHING UNIT

Another caution. The J552 jack on the matching unit (for the RF cable) is a thin-skinned, soft metal job that bends easy . . . sorta like a cornstalk in a windstorm. Guard it when mounting and dismounting the matching unit, or whenever else it's not protected.

Watch the connector ends on the cable from the bottom of the matching unit to the RT. The males of the cable and matching unit have just enough clearance to mesh . . . but if you give the connector a twist, you'll bend or break the pins. Best deal is to connect the cable at the RT first; then hook it to the J551 jack on the matching unit.

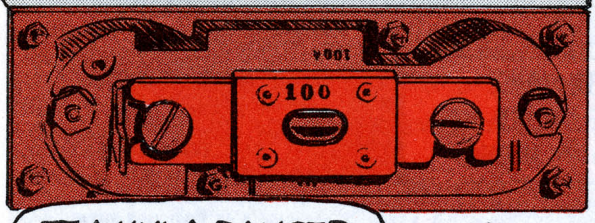
Repairs to the MX-2799 matching unit are limited to replacing the K551 relay and the 10 matching network circuit boards. No sweat when you follow the words on pages 60 and 61 of TM 11-5820-401-20.



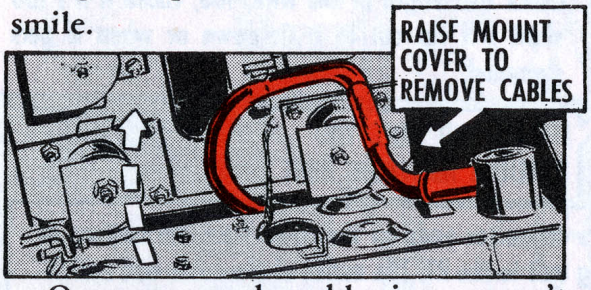
P.S. MORE

MOUNTS

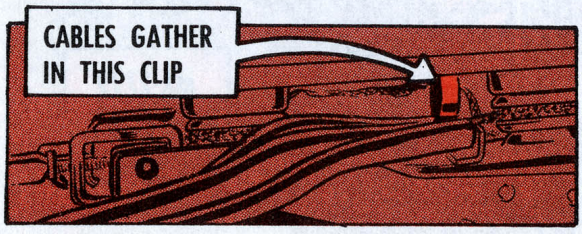
Repairs to mounts are limited to replacing fuse links. Be extra careful not to bend the fuse links or the extended terminals of the junction box.

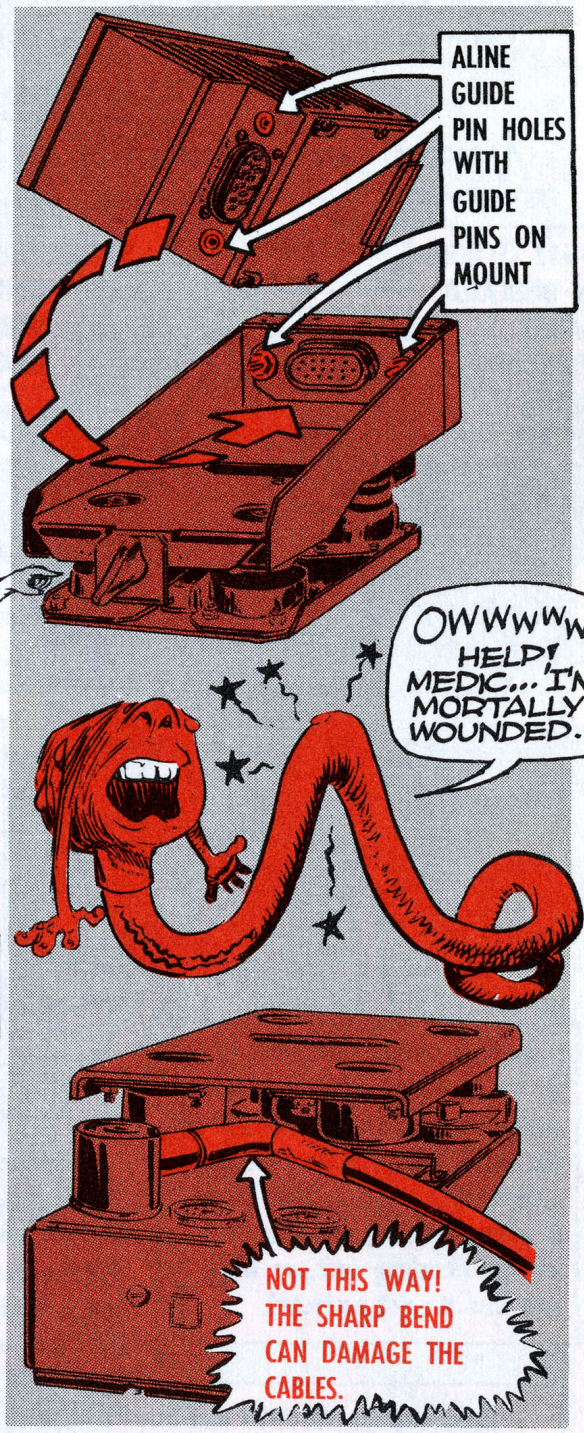


Lest ye do some manly cussin' over the mounts, their design is necessary to conserve space . . . even if they do make cable connecting tough. No design change is planned, so suffer with a smile.



Once you get the cables in, you can't remove 'em without takin' off the entire mount or its top plate. The dope on removing the top plates of the MT-1029 and MT-1898 will be in a change to TM 11-5820-401-20.

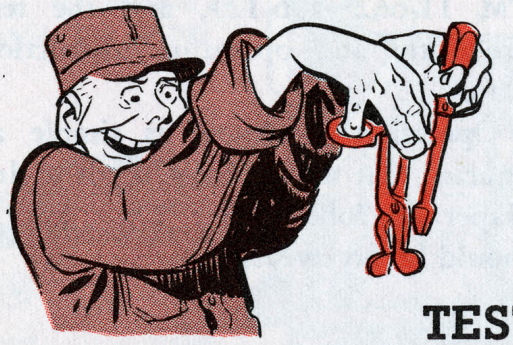




The wrong way will strain and bend the cables till they're damaged. The cables go under the top mount plates and gather in a clip on the underside of the plates. They feed out of the clip to connections in the rear of the mount.

TOOLS

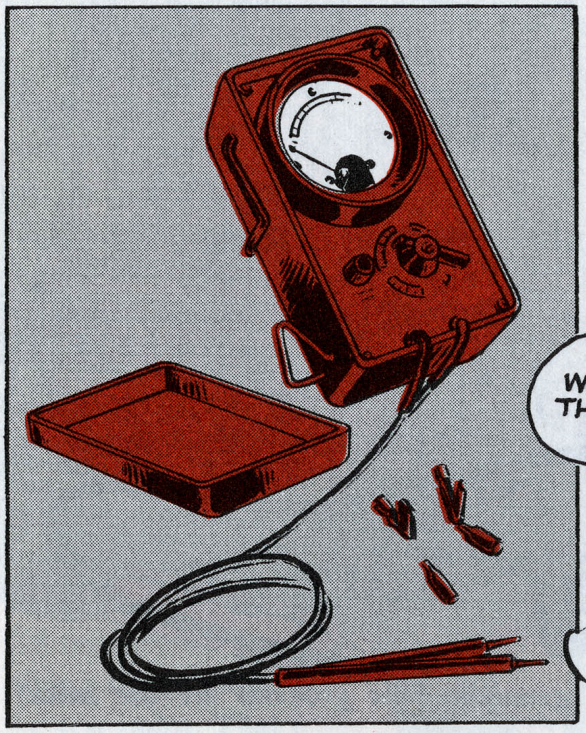
Tools and test sets are for specific duties, and getting gay with 'em can put your sets out of business. Like, organization mechanics **IN NO CASE** should try to take apart the front panels of the radio sets.



TK-115/U tool equipment, or TK-115G tool kit (the same animals) are for second echelon and go by FSN 5180 856-1578. The TK-115 replaces the TE-41 and is illustrated in SM 11-4-5180-R09 (Feb 62) and PS 117, pages 50-53.

TEST SETS

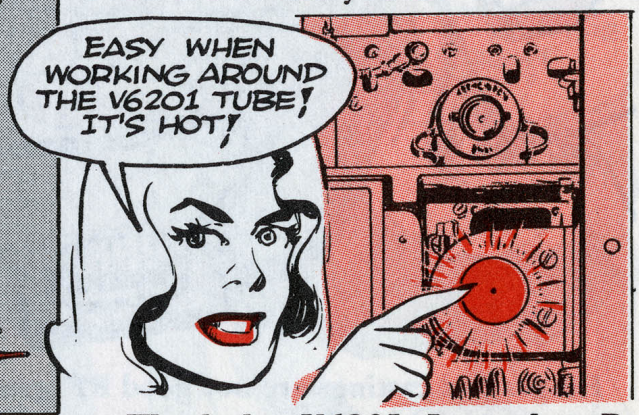
Test Sets: The AN/URM-105 multimeter is no stranger to organization mechanics, and the only parts replacement you do on it is replace batteries. Period. If the set doesn't work with good batteries, yell for higher echelon.



You should know the TV-7/U electron tube test set like an old girl friend, too. Check the TM for the few maintenance duties you have.

Unlike an old girl friend, the TV-7/U has only one use on the VRC-12's —testing the V6101 tube in the RT. The only other tube that's tested and replaced by you is the V6201 in the RT. That's done by substitution and not with the test set.

Check all cables and connectors before removing either tube, and don't rock or rotate the V6101 when you're working it out with the tube puller. Pull it straight or you'll damage the pins or contacts. Page 43 of TM 11-5820-401-20 fills you in.



Watch that V6201. It gets hot. Be careful when working around the heat sink block of the V6201, since you can damage the block. Check the TM first.

PS MORE

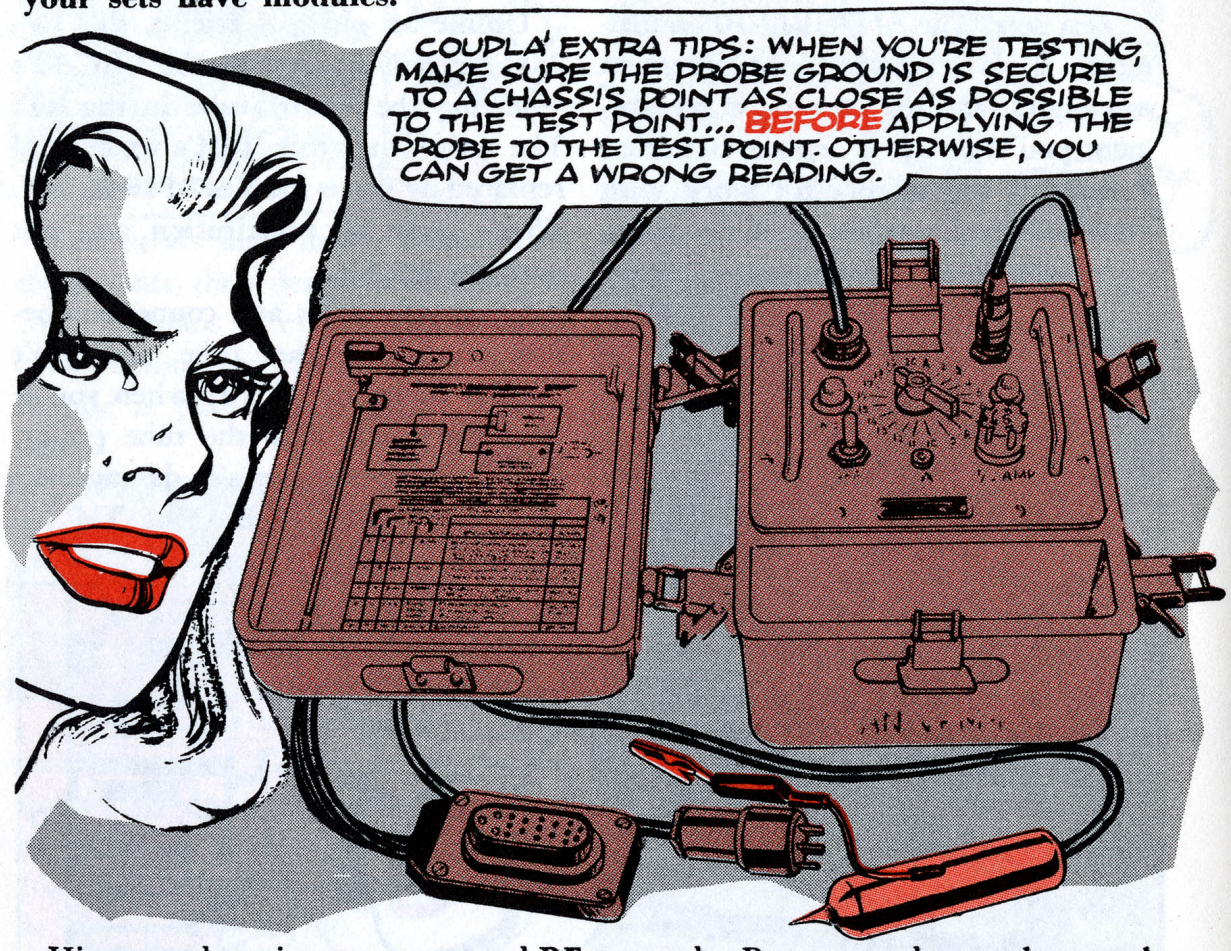
AN/VRM-1

The AN/VRM-1 radio test set (for VRC-12 modules) is a new baby, and she wants you to get real familiar with her before use. She's made to keep your -12 series sets putting out and away from higher echelon shops.

Modules are the backbone of your set and your work, so when your VRM-1's make the scene, treat 'em nice. The sets'll save you time, and time is one of the big reasons why your sets have modules.

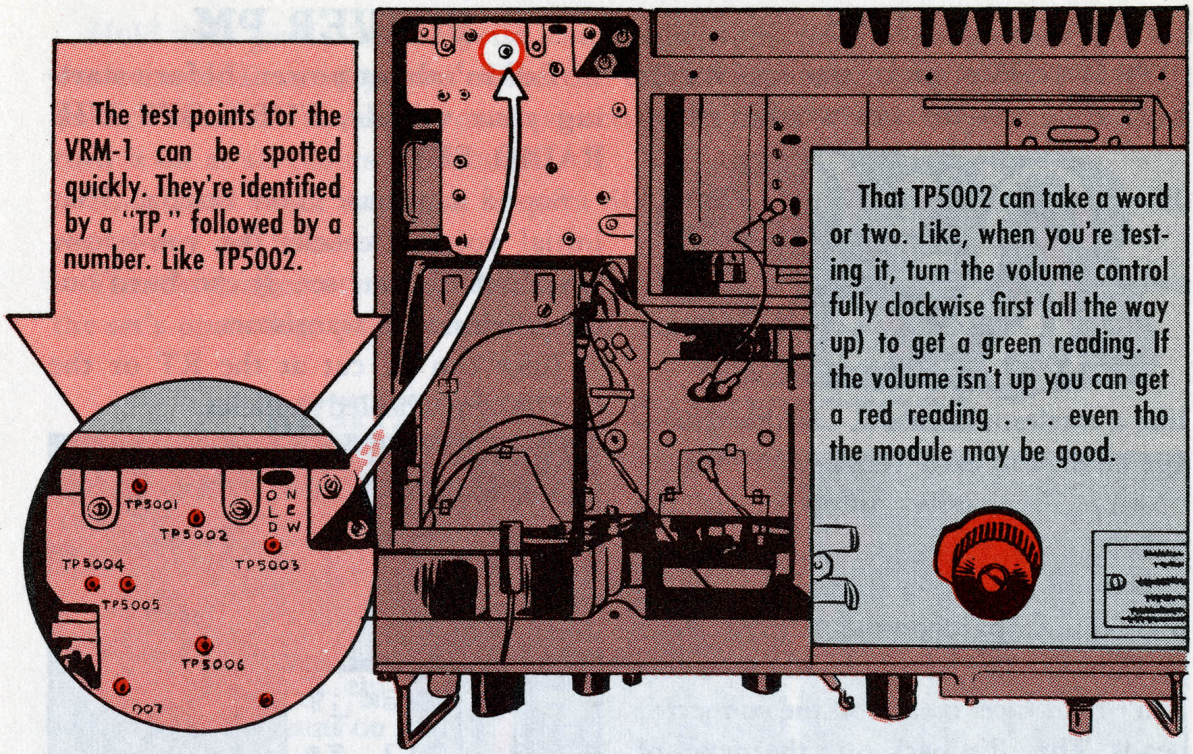
VRM-1 maintenance includes replacement of defective fuses, fuse caps, lamps and jewels (see para 21, page 22, TM 11-6625-496-12), and the test probe tip and operating instruction plates.

Operation is almost as simple as figurin' that a wet baby needs a dry diaper, so follow your TM's, and it should be no sweat.



Hinges and castings are not good RF grounds. Best grounds are the metal portions of the chassis itself.

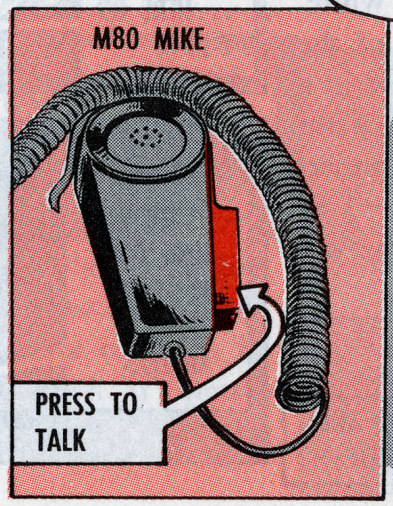
Be sure all controls of the radio sets are set as indicated by TM instruction charts . . . and change the settings as required when proceeding with the tests. Tests are for specific frequencies and the like, and you can get nothing on the readings if the controls aren't set right.



Hold up a minute before using the chart on page 17, subparagraph 14e of TM 11-6625-496-12. The first step is due for a correction.

If you get a green reading in Step 1, stop the test, forget about Steps 2 thru 12, **and the A3000 assembly is OK.** The procedure for a green reading should NOT be "higher echelon repair required" as stated in the chart. If it's green, the assembly's good and no other steps are required.

Whenever "transmit" is required, make sure you press the push-to-talk switch of the M-80/GR mike before applying the probe to the test point. That "before" is important . . . to keep you from getting a wrong reading.

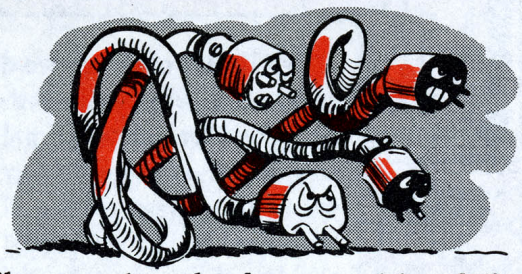


A special few words on Chart 5, page 13 of the VRM-1 TM. Follow ALL the instructions on that chart, including the reminder on test point 8008 to remove the P6003 lead from the oscillator-buffer (A6000) and replace it after the test.

MORE

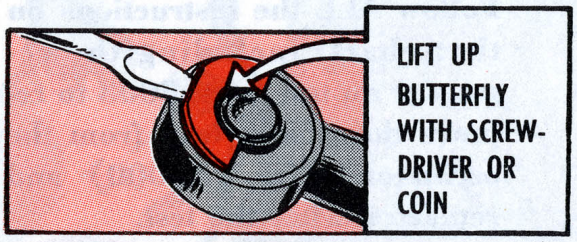
CABLES

As for cables, their connectors were kept alike so's the sets wouldn't look

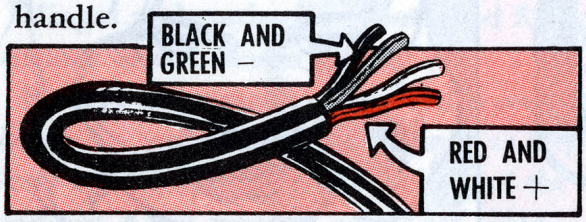


like a rattlesnake den . . . with a different cable for each connection. Where possible, the only difference is the length.

But . . . the cables have a bug which their counterparts on the Angry 3 series don't have. The new butterfly fasteners don't float nice 'n easy on the connector heads. They flip back into the recess of the connector head and can bust a fingernail when you try to lift them.



While we're on cables, watch that power cable (CX-4720), from the mount to the battery. The plus (+) wires of the cable are red and white. They go to the plus (+) post of the vehicle battery or the counterpart in a connector. The black and green wires go to the negative (−) post. Connect 'em (+) to (+) and (−) to (−) or you'll have more damage than you can handle.

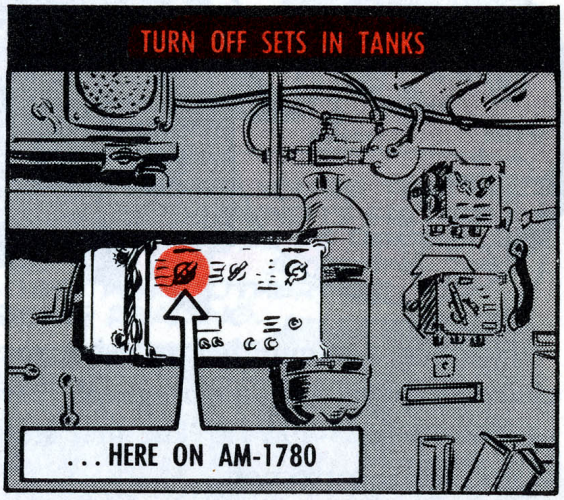


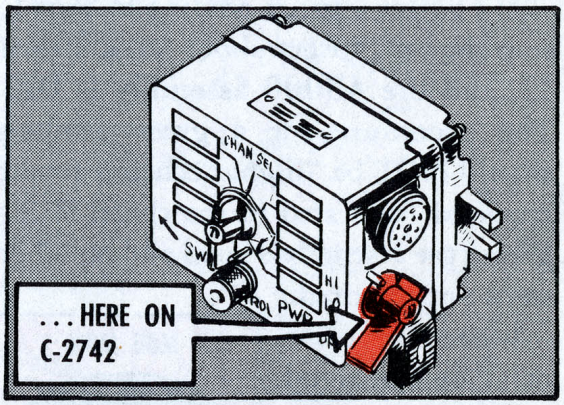
POWER PM

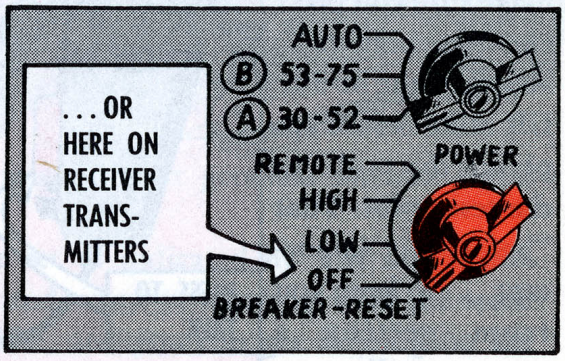
Talkin' about power, before starting your vehicle, TURN OFF THE RADIO SET!

Sound familiar? You betcha. That initial voltage knocks the you-know-what out of your set. It can burn out the diodes and transistors.

Juice can be cut at the RT or the C-2742 in wheeled vehicles.







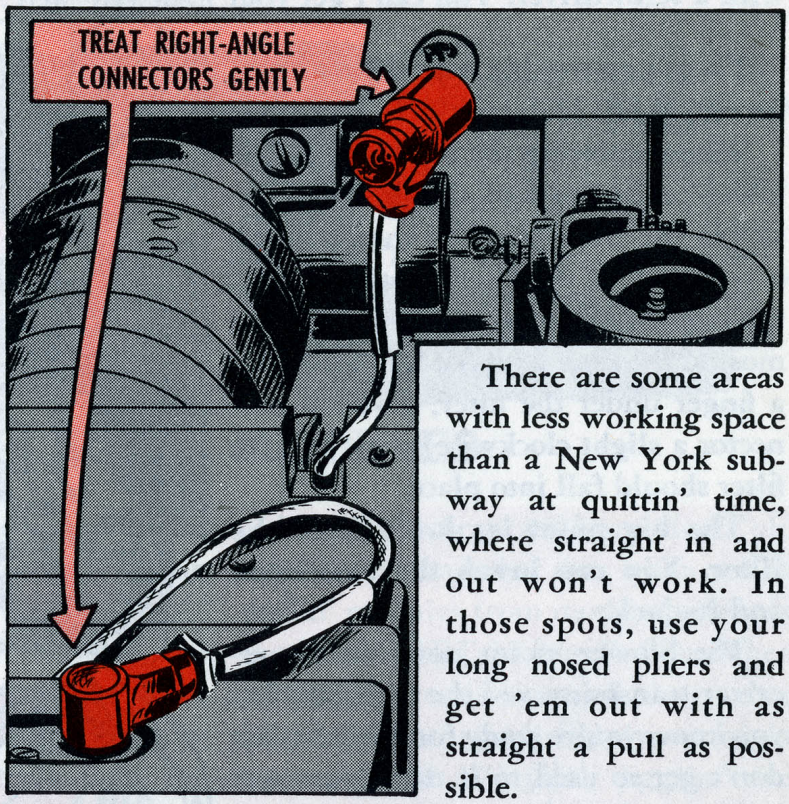
Hold your girdle here, Myrtle, cause you want to make sure your C-2742 has control. It usually does when the RT of the automatics is on REMOTE (which means it should be on slave setting to the C-2742). If you're not sure, turn it off at all points mentioned.

And don't check any item in para 50, page 34 of TM 11-5820-401-10 with the power on. Same story.

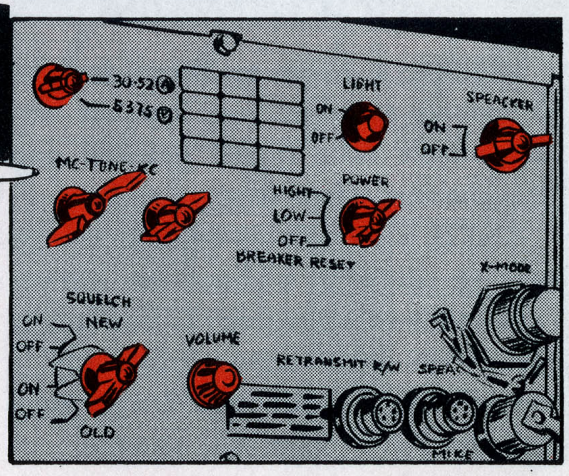
There's danger at the AT-912 and the ANT connector on the RT's when the set's operating. Just remember, 700 volts is a heck of a wallop.

RIGHT-ANGLE CONNECTORS

Another general point. The small right-angle connectors used in the RT's and receiver can take a minor beating, but if you treat 'em like their big cousins on the ends of the power cables they'll only give you grief. Work 'em like you would a hot wire when you're removing or replacing 'em. If you bend or jiggle 'em instead of pushing 'em straight in or out, you can spread the ends and make 'em useless.



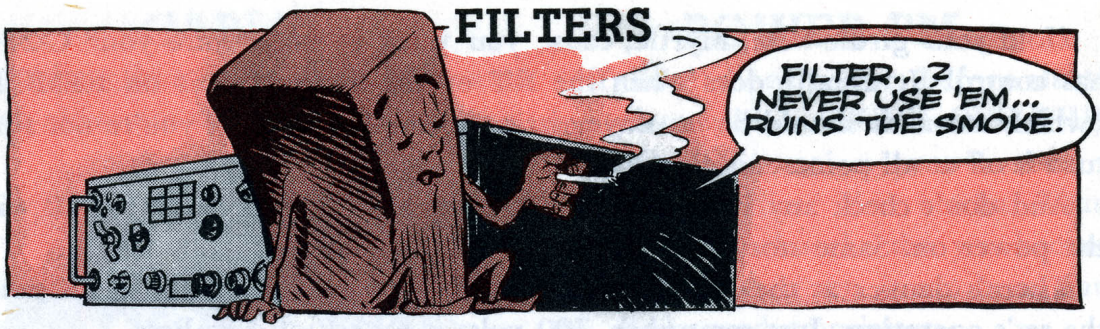
There are some areas with less working space than a New York subway at quittin' time, where straight in and out won't work. In those spots, use your long nosed pliers and get 'em out with as straight a pull as possible.



Another problem you've gotta live with is screws on switches and control knobs. Check the screws often to be sure they're snugged down. It's pretty hard to dream up somethin' better'n those little items.

PS MORE

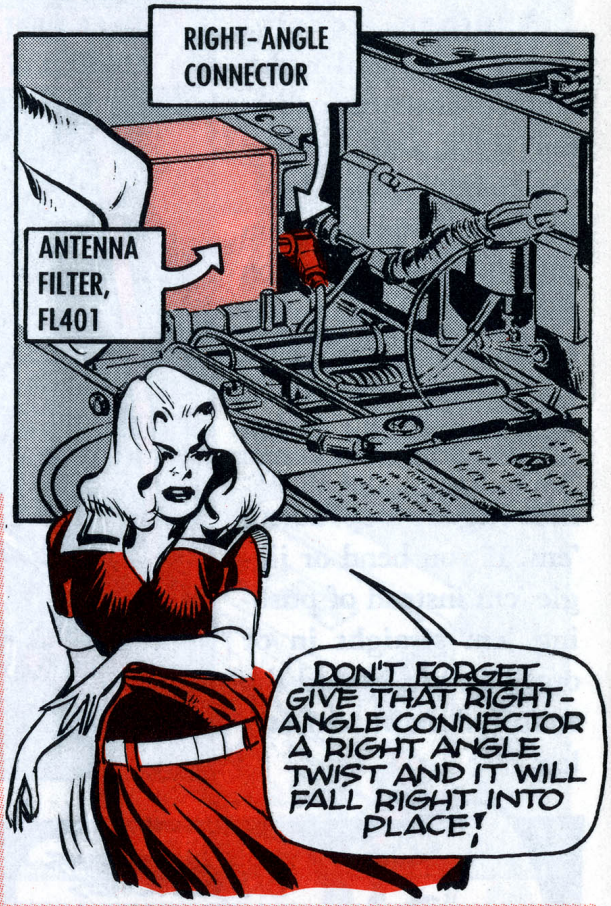
FILTERS



Before removing the FL401 antenna filter on either RT take off the lower connector, FL401J1, with long nosed pliers or move it straight back easy-like with a screwdriver. You can't get your hands in there.

There's no trouble with the rear connector, FL401J2.

When replacing the filter, put on the lower connector and slip it down the slot in the front panel of the RT until it rests easy. If the filter's not flush with the edge of the panel (and it won't be most of the time with the RT-246), slip a finger under the filter, give the connector a slight clockwise twist, and the filter should fall into place.



The big point is, don't force the filter. You can break the connector and its jack.

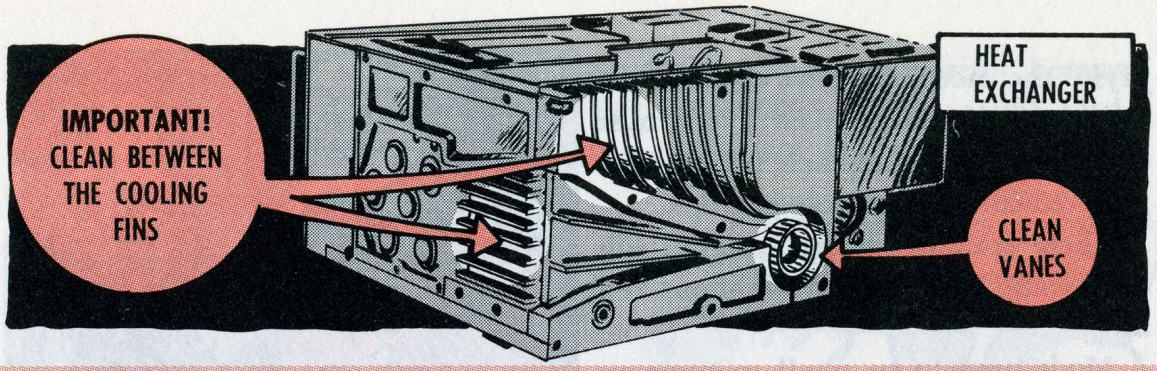
The blower motor noise on the receiver-transmitters of the radio sets lets you know you're ready for business, but don't get so used to it that you won't notice the first time the blower fails to go on.

Make it a habit to listen for the blower as soon as you key the set. Like, don't take it for granted and miss the cue when it stays silent.

And if it doesn't go on, control the urge to transmit without the blower (unless it's an emergency). You might get away with transmitting for a coupla' minutes, but try it longer than that and you'll court bad trouble.

If the blower pulls the silent act, call your support.

When the set's operatin' in dusty or sandy areas, your mechanic should get inside about once a week to wipe dust and dirt from the vanes of the blower motor squirrel cage and the fins of the heat exchanger. Once a month is about right for other areas.

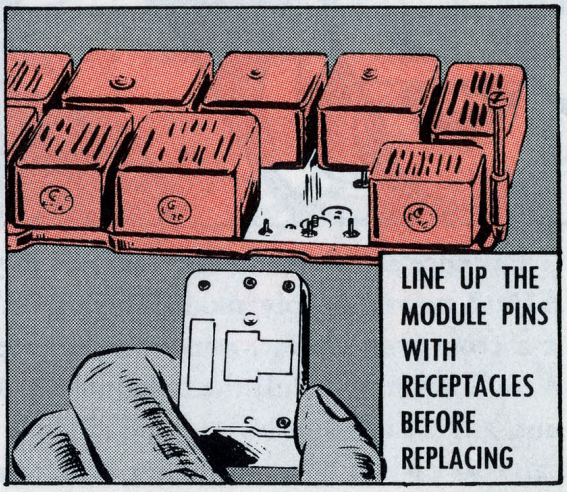


There're no air filters in the air intake and exhaust ports of the RT heat exchangers, which means the heat exchangers may get dirty. Your TM fills you in on getting to the exchangers.

REPLACING MODULES

Don't let the mods get you nervous. Your TM's have full instructions on checking the modules, and the AN/VRM-1 module test set for the -12 series and AN/GRM-55 test set for the 25 series are easy to operate. Equipment Performance Checklists in the TM's steer you to the mods you should check and tell you what to look for.

Nobody wants to hurt dear old mother, so remember that when you're pullin' modules from mother boards in the RT-246, RT-524 or R-442. When putting the mods on or off the mother boards, press or pull lightly—straight up or down. Wigglin', jigglin' and



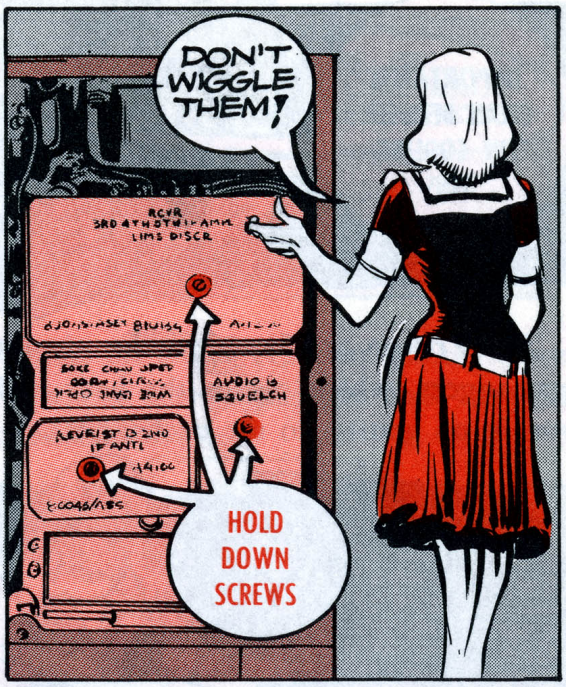
PS MORE

pryin' the mods can bust up both the mods and the board. And if you bust one contact in a receptacle it can mean replacement of the whole board.

There are a few exceptions, but you can handle most mods straight out and in.

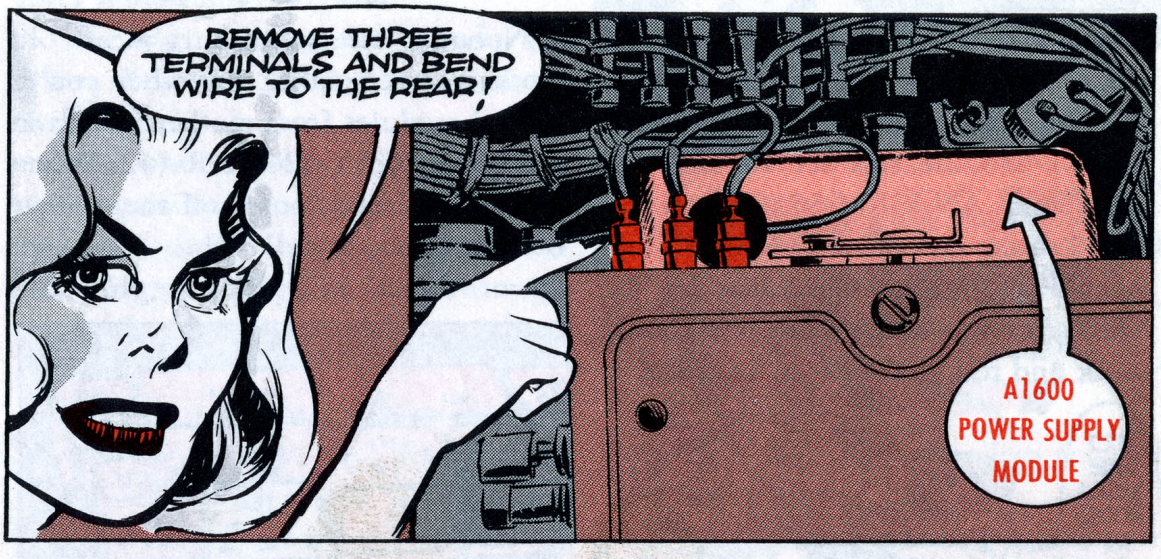
Mods need to be small to conserve space and weight, so don't treat 'em like they've got pins of pitchfork prong size.

Before you start pulling the mods, be sure the captive holddown screws are all the way loose. They might wiggle a little before they're free, so don't let 'em fool you.



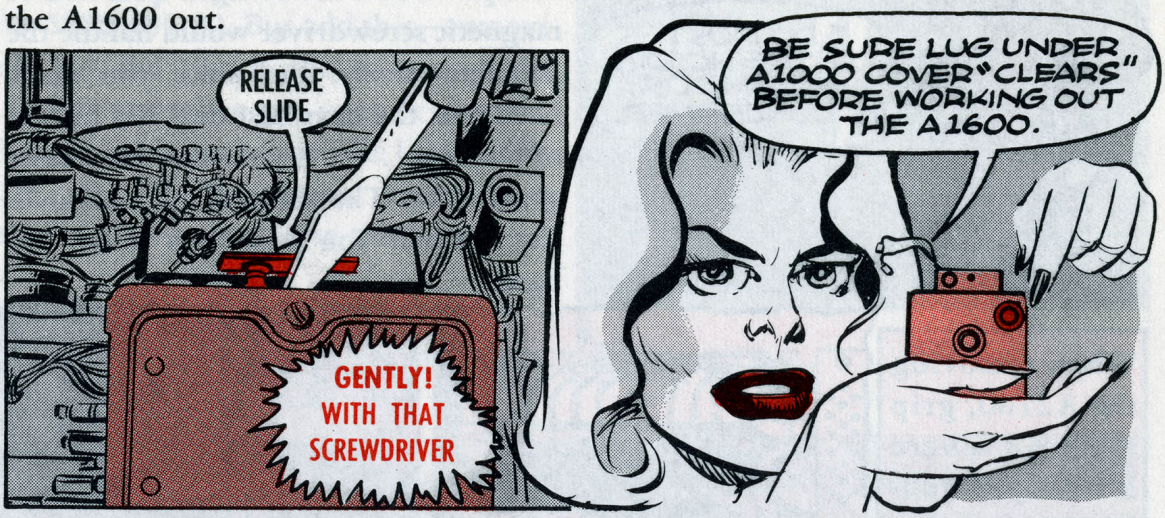
The holddown screws on most of the mods also connect the module grounds to the chassis grounds, so make sure the screws are snug.

When you're troubleshooting loosen the screws of one mod at a time, and snug 'em up when you replace 'em or before you test another mod. Even a good one may not work if the screws aren't snugged.



Patience is the password for you guys who have to remove and replace the A1600 power supply module in the RT's and receiver. Before you even give it a cross-eyed squint, remove the three terminals above it that connect to the A1000 assembly. Pull the terminals 8, 9, and 10 (brown, purple, black) straight out, and bend the wires up and slightly away from the A1000. If you don't you can tear off the wires of the terminals or bend the pins.

After releasing the snap slide atop the A1600 slip a screwdriver between the A1000 and the case of the A1600. Pry the A1600 out just enough so the lug just under the A1000 cover clears its socket in the A1600, and then work the A1600 out.

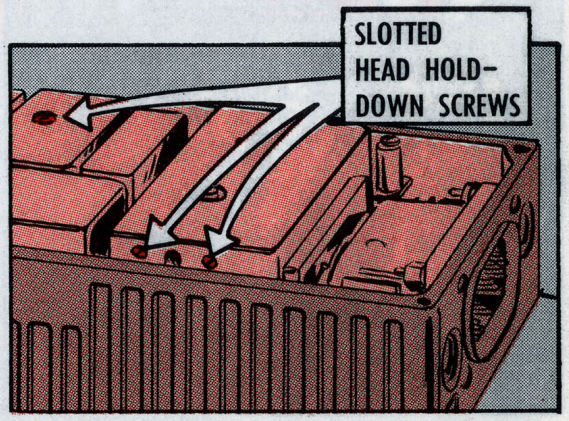


When replacing it, you may have to take the screws out of the A2100 assembly so the A1600 will clear the wires. Those tips, and TM instructions, should see you through, even tho that assembly can be a real pain.

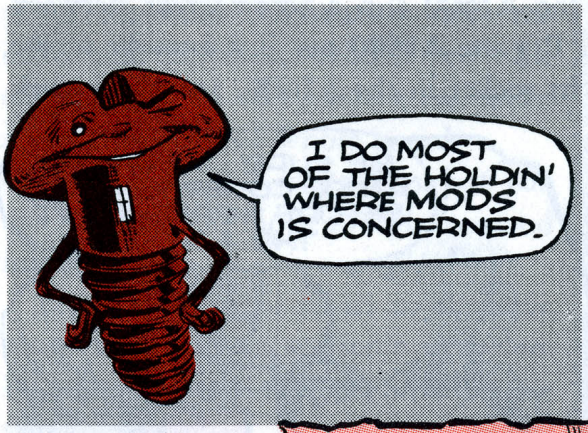
You may run into a band switch problem in the three main components which calls for higher echelon repair. The fault's usually caused by improper installation of a module board in the A6000 assembly of the RT's, or in the A1000,which breaks a plastic tit on the band switch slide. It then keeps the RT's or receiver in the band where the tit broke. . . There's also the chance it can break in normal operation.

The tit may be at fault if you can receive or transmit on one band only—in which case call for higher echelon help.

Another tip: Just about every mod is held on its assembly board by screws with slotted heads. Nuts and other fasteners are for parts aside from mods.

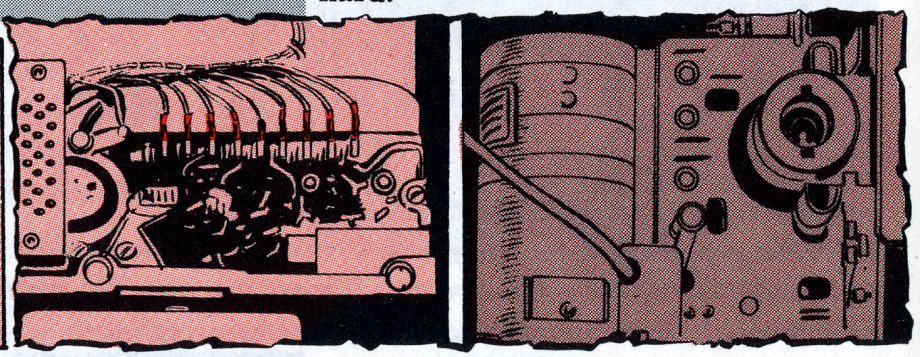


P.S. MORE



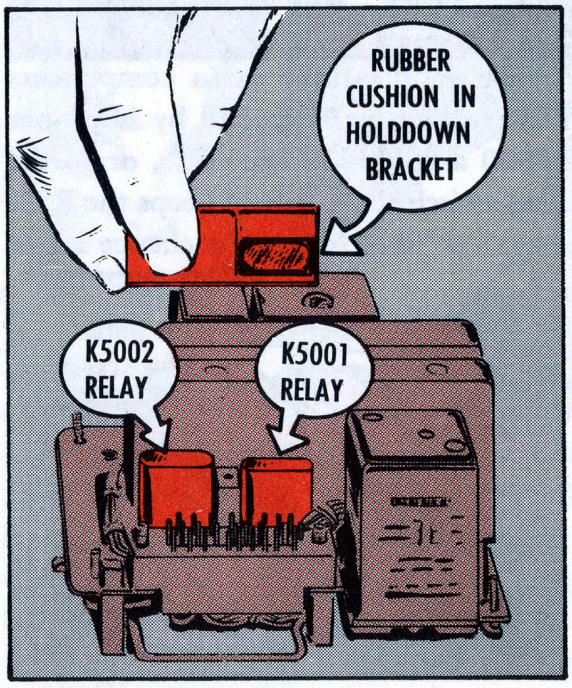
The holddown screws of the A2100 assembly (RT and receiver) are hard to replace because of tight quarters. A magnetic screwdriver would handle the problem nicely; but since you don't have one, the next best deal is a bucket of patience . . . try to start the screws gentle-like. The screws'll flip all over the place if you push 'em down too hard.

When removing the A2100, grip the lead where it's crimped. Pulling by the wires may break 'em off.



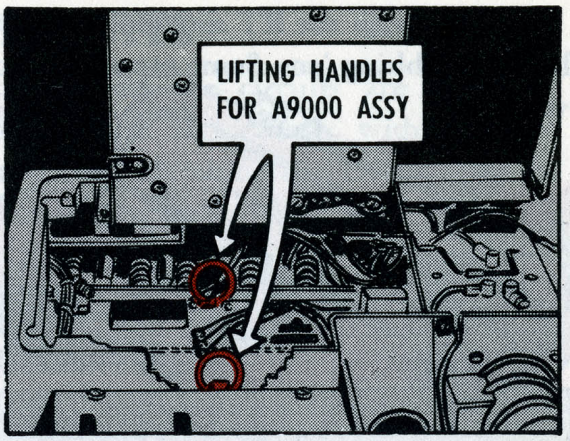
Double-check the A2100 in the RT to be sure the No. 2 lead (blue-white) and the No. 3 lead (green-white) are going to the right terminals. Same goes for the No. 7 (white) and No. 8 (gray-white) leads. They're color coded, but the color strips on the leads are hard to spot without turning them in your hand.

RELAYS

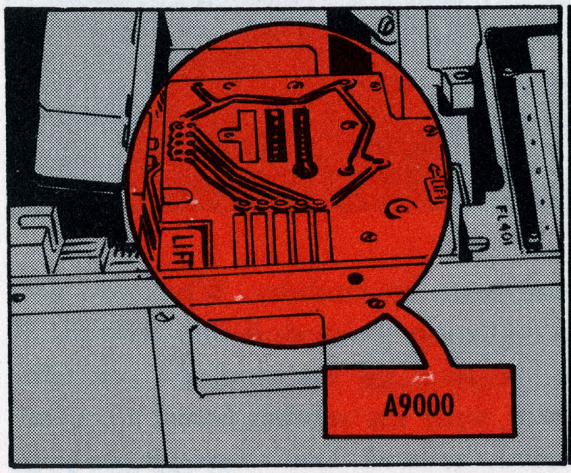


The K5001 and K5002 relays of the A5000 in the three main components are interchangeable, but with different functions. The K5001 is shorter and fits under the rubber cushion on the relay holddown bracket.

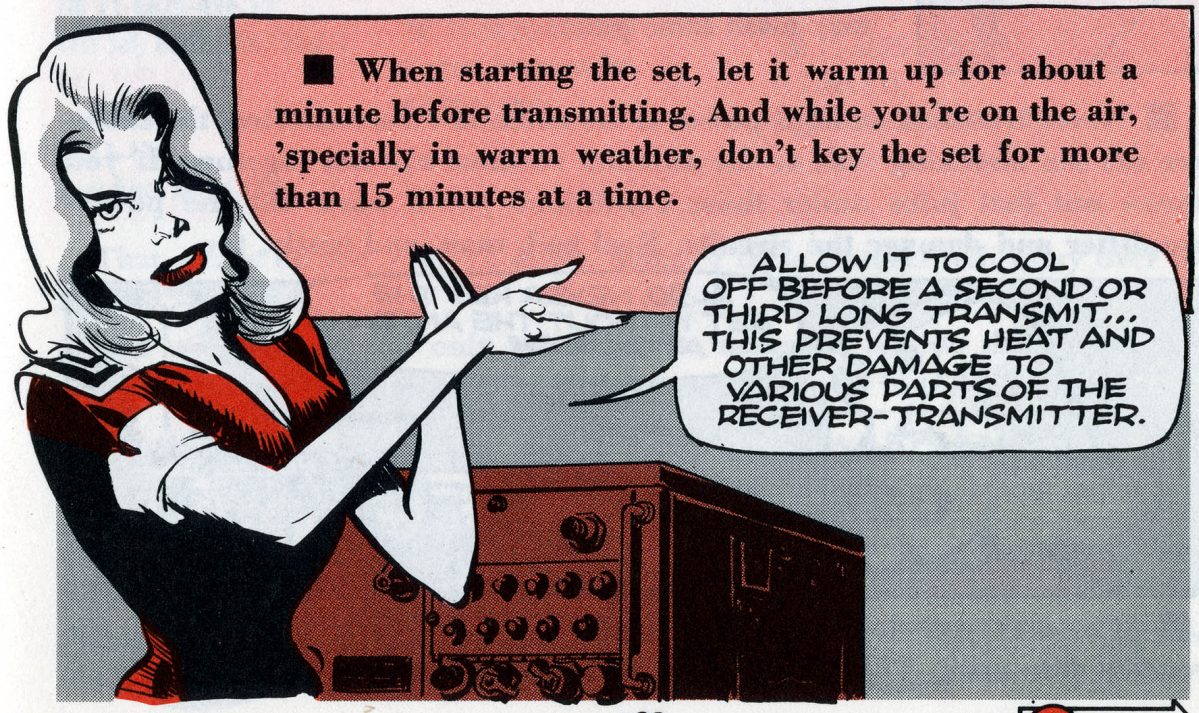
Relay replacement in the A9000 of the RT's isn't tricky when you follow subparagraph 17e, page 52-53 of TM 11-5820-401-20. But add this—remove all but the two hinge screws of the A9000, and when you open or close the hinged cover, make sure the lift handles are clear. You'll get most trouble from the handles as you close the cover.



TRANSMITTING TIPS

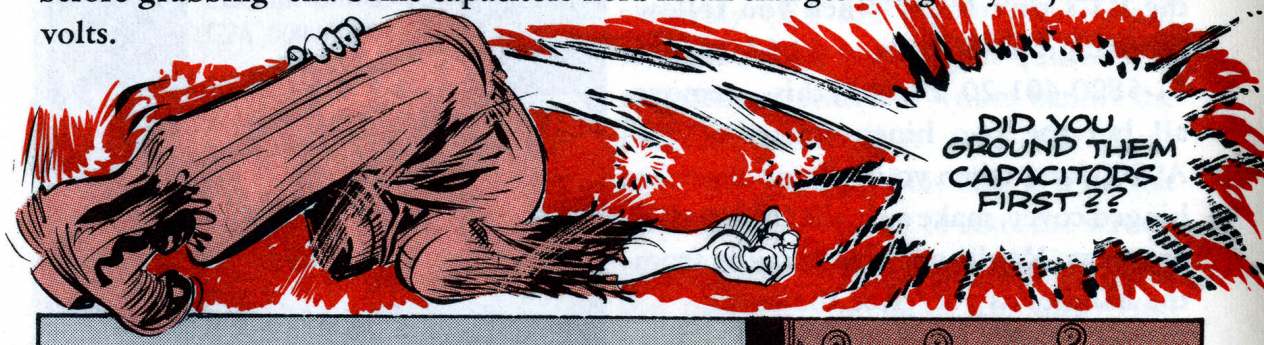


■ For your info, some failures have occurred during tests of the A9000 (power supply), but they were due to continuous transmit for more than an hour. The C9009 capacitor wasn't built for that hot a job, so it blows. The A9000 is being redesigned to beat that, and new parts will go in. You'll get the word on it, so use the one you have till you hear otherwise.

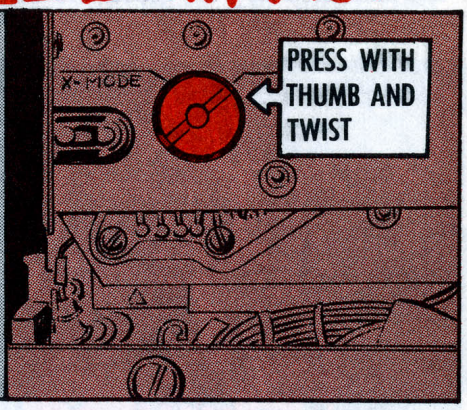


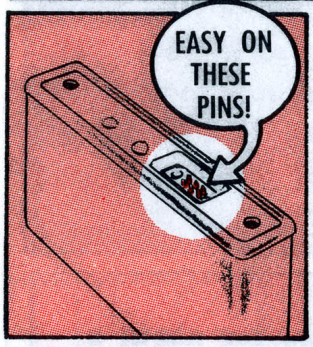
PS MORE

■ Even with the RT disconnected you short circuit electrical parts to ground before grabbing 'em. Some capacitors hold mean charges and give you jolts with volts.



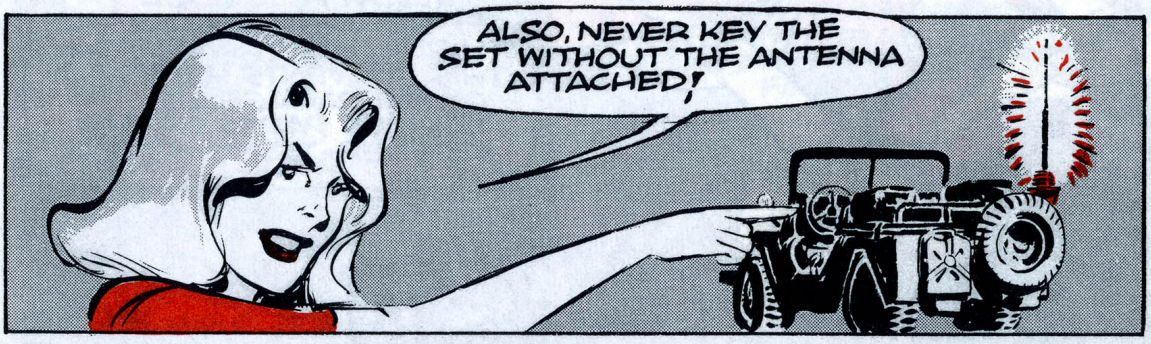
■ Use your thumb when turning the X-MODE-NORMAL switch on the A4000 from one position to another. That slot in the plastic's not for a screwdriver . . . which could chew up the plastic. The switch stays on NORMAL unless you're otherwise instructed.





■ One last general point on modules. When you get much resistance after alining the module pins with their contact points, hold it. Back off the mod so's you can recheck the alinement with the mother board . . . or maybe you've reversed the mod. Don't force it, or you may mash some pins.

■ **Never transmit on high power if the antenna's disconnected, the cables are off the matching unit or the antenna sections are not together. If you throw out that juice under those conditions you'll burn out the power-amplifier and damage the circuits. Real bad, man, and costly, too.**



■ Whatever you do, heed the TM caution warnings so's you won't jolt yourself into orbit. Those dangerous voltage warnings aren't snow jobs.

PRINTED CIRCUITS

Finally, printed circuits like it cool, man. Which means when you're checking 'em for cracks or breaks, keep that hot iron out in space. That goes for any other time the circuits are exposed. Touch 'em accidentally with an iron and the only thing the circuit'll do is quit.

PUBLICATIONS

TM 11-5820-401-10 and -20, Radio Sets AN/VRC-12 and AN/VRC-43, -44, -45, -46, -47, -48, -49.

TM 11-6625-203-12, Multimeter AN/URM-105.
SB 11-540,
SB 11-513 and
TB SIG 213-35,
all on AN/URM-105.

TM 11-6625-274-12, Test Set, Electron Tube, TV-7/U, -7/Ua, b, d.

TB 11-6625-274-12/1, Test Set TV-7/U.

TM 11-5020, Antenna Equipment RC-292.

TM 11-6625-496-12, Test Set, Radio, AN/VRM-1.

TM 11-5126, Power Supply PP-1104A/G.

SB 11-476, Mast Base AB-15/GR.

TM 11-5830-340-12, Intercom Set AN/VIC-1(V).

TM 11-5820-487-20P, RT-524/VRC.

TM 11-5820-399-20P, RT-246/VRC.

TM 11-5820-409-20P, R-442/VRC.

TM 11-5820-401-20P, Radio Sets AN/VRC-12, AN/VRC-43 thru AN/VRC-49.

TM 11-5820-402-20P, Antenna AT-912/VRC (Including Mounting-Matching Unit MX-2799).

TM 11-5820-403-20P, Mounting MT-1029/VRC.

TM 11-5820-411-20P, Mounting MT-1898/VRC.

TM 11-5820-405-20P Control, Intercom Set, C-2296/VRC.

TM 11-5820-406-20P, Amplifier AM-1780/VRC.

TM 11-5820-407-20P, Control, Frequency Selector, C-2742/VRC.

TM 11-5820-408-20P, Control, Intercom Set, C-2298/VRC.

TM 11-5820-410-20P, Control, Intercom Set, C-2297/VRC.

TM 11-5820-412-20P, Control, Radio Set, C-2299/VRC.

TM 11-5820-348-20P, (1 Dec 61) Antenna Equipment RC-292.

TM 11-5985-230-12P, Mast Base, AB-15/GR.

TM 11-6625-496-20P, Test Set, Radio, AN/VRM-1.

TM 11-6625-274-20P, Test Set, Electron Tube, TV-7/U.

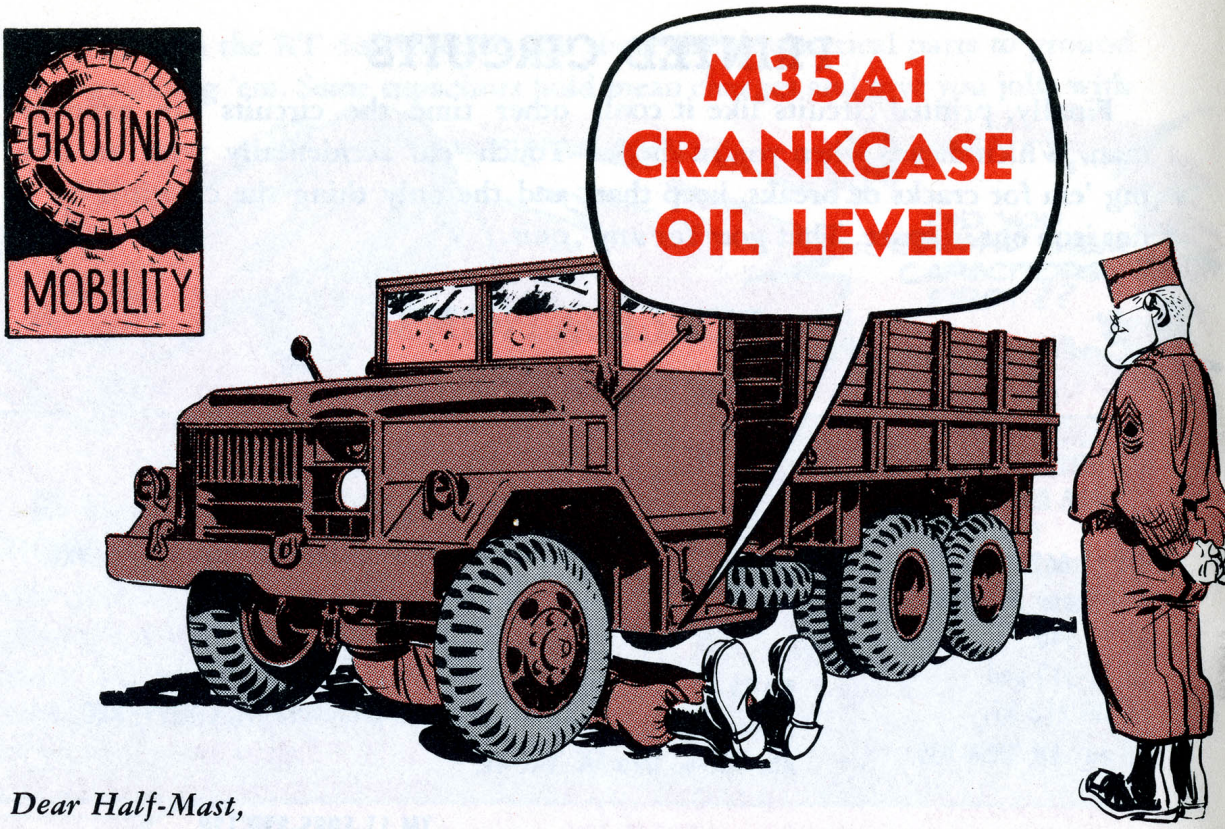
TM 11-6130-218-20P, Power Supply PP-1104A/G.

TM 11-6625-203-20P, (15 Dec 61), Multimeter AN/URM-105.

TM 11-5830-340-20P, Intercom Set AN/VIC-1 (V).

That wraps up the VRC-12 series. Some of these features will carry over to the PRC-25 series.

And you, Joe, are the only guy who can make the sets do the job they're designed to do. You are that important.



Dear Half-Mast,

Our outfit has received a bunch of M35A1 2½-ton trucks. The main problem is that we're not too clear about the amount of oil that goes into the crankcase.

TM 9-2320-235-20 and LO 9-2320-235-10 say the crankcase, including the filters, takes 20 quarts of oil. When we put in 20 quarts, the oil level (after running the engine) is 2½-inches above the dipstick's FULL mark.

When making an oil change, shall we put in 20 quarts or just enough oil to put the level at the FULL mark?

SFC O. V. R.

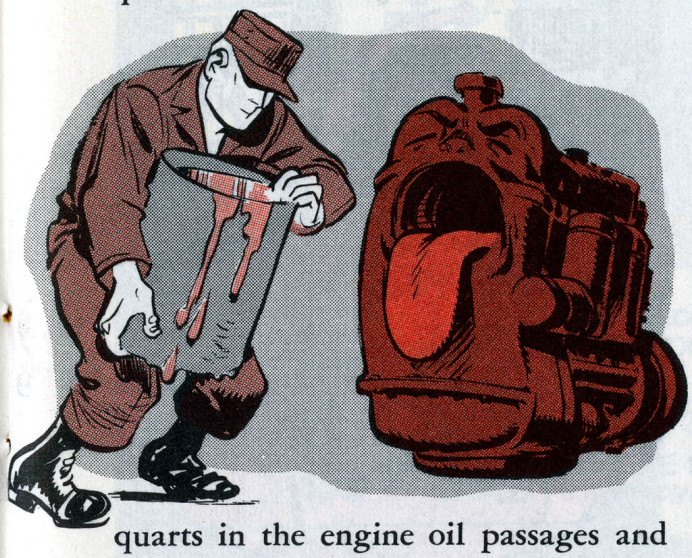
Dear Sergeant O. V. R.,

Overfilling an engine crankcase with oil is worse than running it a little short. Overfilling sometimes keeps vents and engine breathing apparatuses from working, and that sure gives poor engine performance and spark plug fouling.

The problem that you're having with the M35A1's oil level has come up before on other trucks. You see, the LO usually gives the total oil capacity for the engine. If you received a "dry" engine right off the production line it would take the amount of oil shown in the LO to fill it. After the engine has received its full load, which would put the oil level at the dipstick's FULL mark, it's hard to drain all the oil out when doing an oil change.

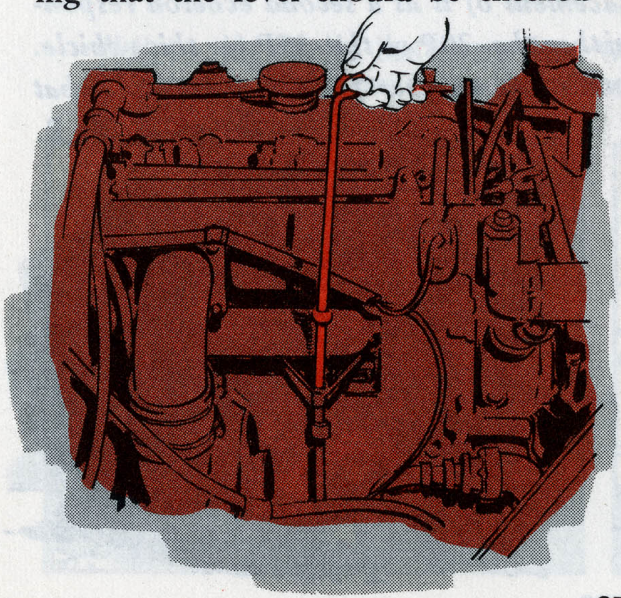
There are the oil holding parts of the engine that must be considered; parts like oil filters, oil passages, sump, and various parts of the engine that hold oil because of their contour. In other words, you never get all the oil out.

Then there is the type of engine, while running, that will hold about 18 quarts in the crankcase and about 4



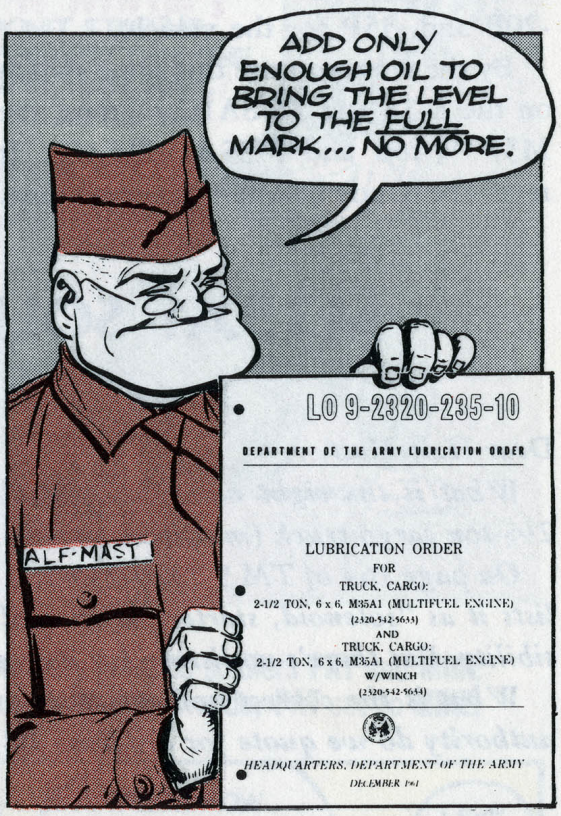
quarts in the engine oil passages and filters, making a total capacity of 22 quarts. And when the engine stops, some of the 4 quarts in the filters and passages flow back to the crankcase raising the oil level on the dipstick well above the FULL mark.

In a case of this sort it would seem that there is too much oil in the crankcase but there isn't. On engines like this the dipstick is usually marked indicating that the level should be checked



immediately after the engine has stopped running. The level check is made before the oil gets a chance to flow back to the crankcase.

Now back to your M35A1's—to refill the crankcase after draining, put in enough oil to bring the level to the dipstick's FULL mark. Even if it only takes 15 or 16 quarts of oil. Then start and run the engine for several minutes. Stop the engine and immediately check the oil level on the dipstick.



When you do this, you'll have 20 quarts in the engine just like the LO specifies.

To keep your drivers from overfilling the engine, pass the word along that oil level checks are more accurate when made after running the engine, and put in only enough oil to keep the level at the FULL mark.

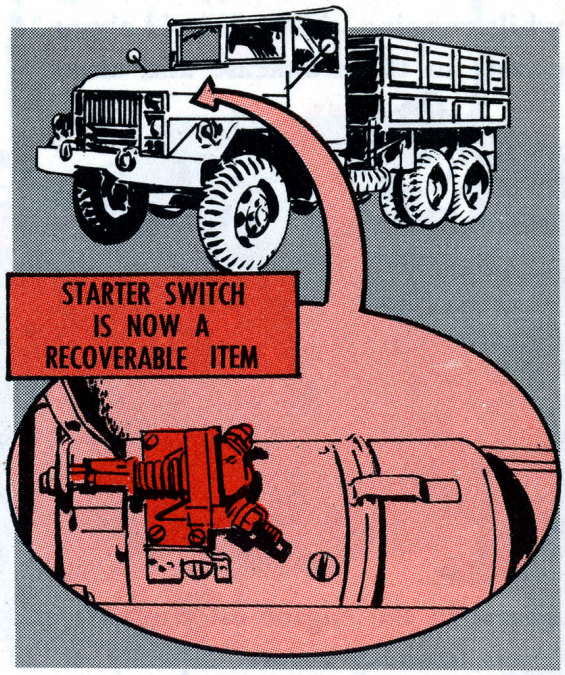
Half-Mast

STARTER SWITCH FOR M35A1

Need a starter switch for your multi-fuel M35A1 2½-ton truck? This switch is listed as Item 2 on page 23 of TM 9-2320-235-20P (Jan 62) but without a stock number. Also, it is listed as a non-recoverable item.

But, all that has been changed. It is now recoverable and the stock number is FSN 2920-322-9613 (Ord Part No. 8328134). This number is scheduled to be listed in the next edition of the -20P and -35P for the vehicle.

By the way, you use this same switch on the M38 and M38A1C ¼-tons, the M37 ¾-ton and M35A1 2½-ton. It might be handy to know this some time.



M35A1 SOLENOID RELAY

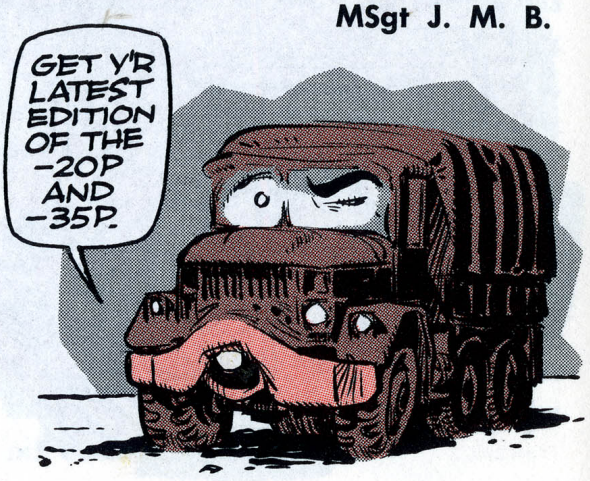
Dear Half-Mast,

What is the right name for the solenoid part of the starter on the M35A1 2½-ton cargo truck (multifuel engine)?

On page 164 of TM 9-2320-235-20 (Jan 62) the Maintenance Allocation Chart lists it as "solenoid, starter" with replacement of it as a second echelon responsibility. But there's no listing for it in either the -20P or the -35P for this vehicle.

What is the correct nomenclature and stock number for this item and what authority do we quote for ordering it?

MSgt J. M. B.

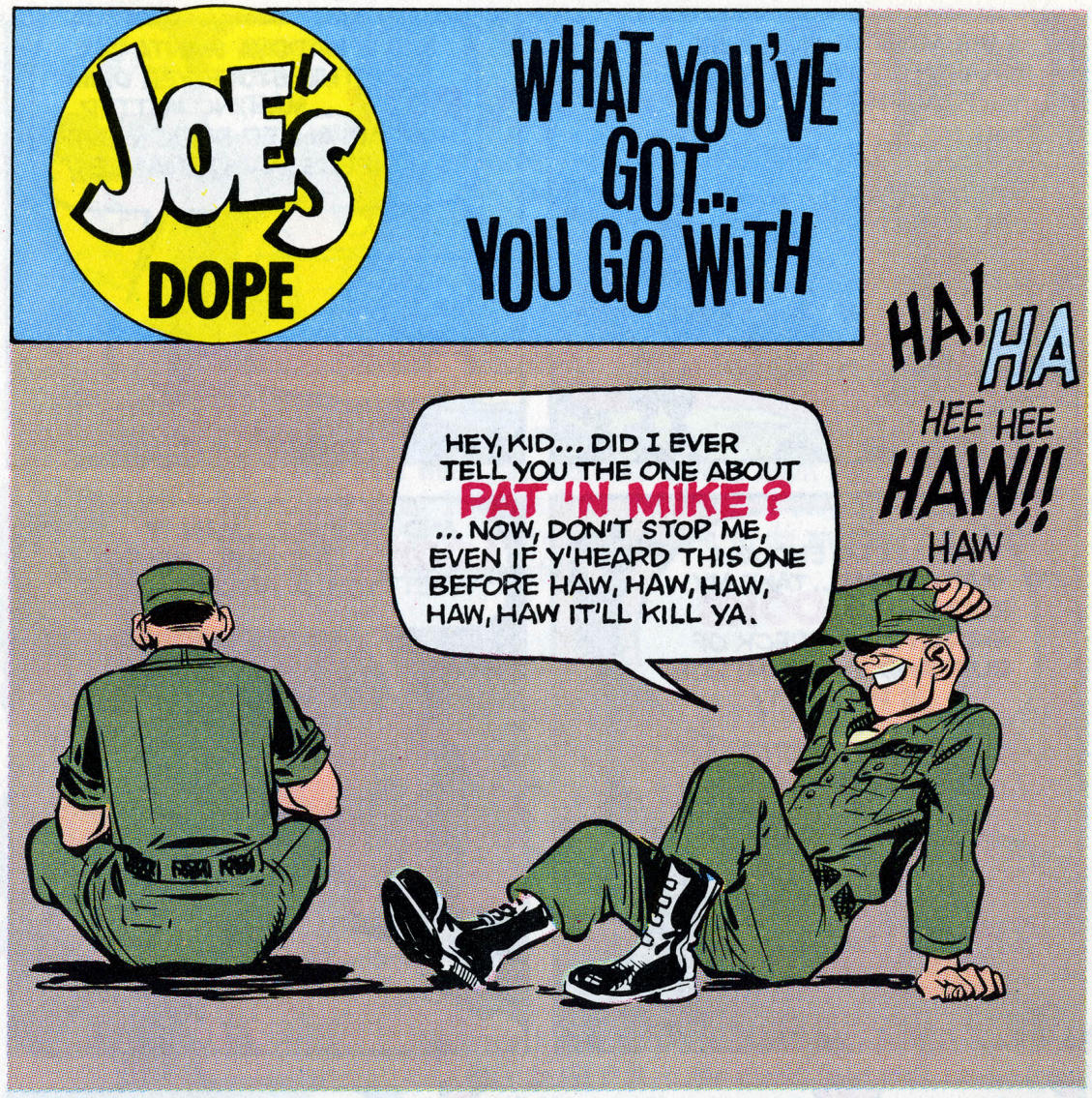


Dear Sergeant J. M. B.,

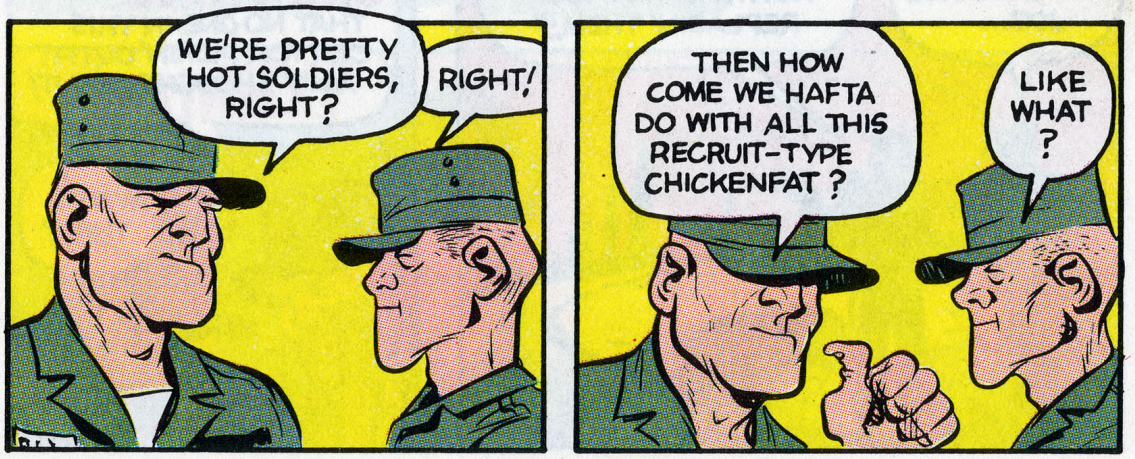
You call it Relay, solenoid, spst, inductive winding, 24V, 2 terminals, $2^{17}/_{64}$ in. id, dia. mtg. holes (starter) FSN 2920-636-8779 (6183391).

The newest editions of the vehicle -20P and -35P are getting out the word.

Half-Mast



Well, . . . Ha, Ha, Ha, there were these two very gung ho soldiers **PAT** and **MIKE** . . . career men with two re-ups behind them Ha Ha Ha. One day **PAT** sez to **MIKE**;



LIKE MAINTAINING THIS EQUIPMENT WHICH WE BEEN TRAINING WITH...
WELL, WADDYA WANTA DO... LET THE STUFF YER USIN' ROT? ...MAN, NO MATTER HOW ADVANCED EQUIPMENT IS IT NEEDS MAINTENANCE!!
WELL, I DO ENOUGH MAINTAININ'... TAKE MY RADIO—IT LOOKS SHINY, NOT A SPECK OF DUST AND THE PAINT JOB IS PERFECT!
AND MY RIFLE... MAN IT LOOKS LIKE NEW... BRIGHT 'N PRETTY AS A PARADE PIECE!!
BUT THAT'S ONLY ONE PART OF THE MAINTENANCE JOB...
SURE, BUT WHY BOTHER BEATIN' MY BRAINS OUT LUBIN' THIS AND TIGHTN'N' THAT AND REPLACIN' THEM!!!
"RELAX, MAX," IS MY MOTTO... BESIDES, THERE'S ONE THING THAT NO ONE IN THIS COTTON PICKIN' OUTFIT AIN'T THOUGHT ABOUT!
WOT'S THAT?

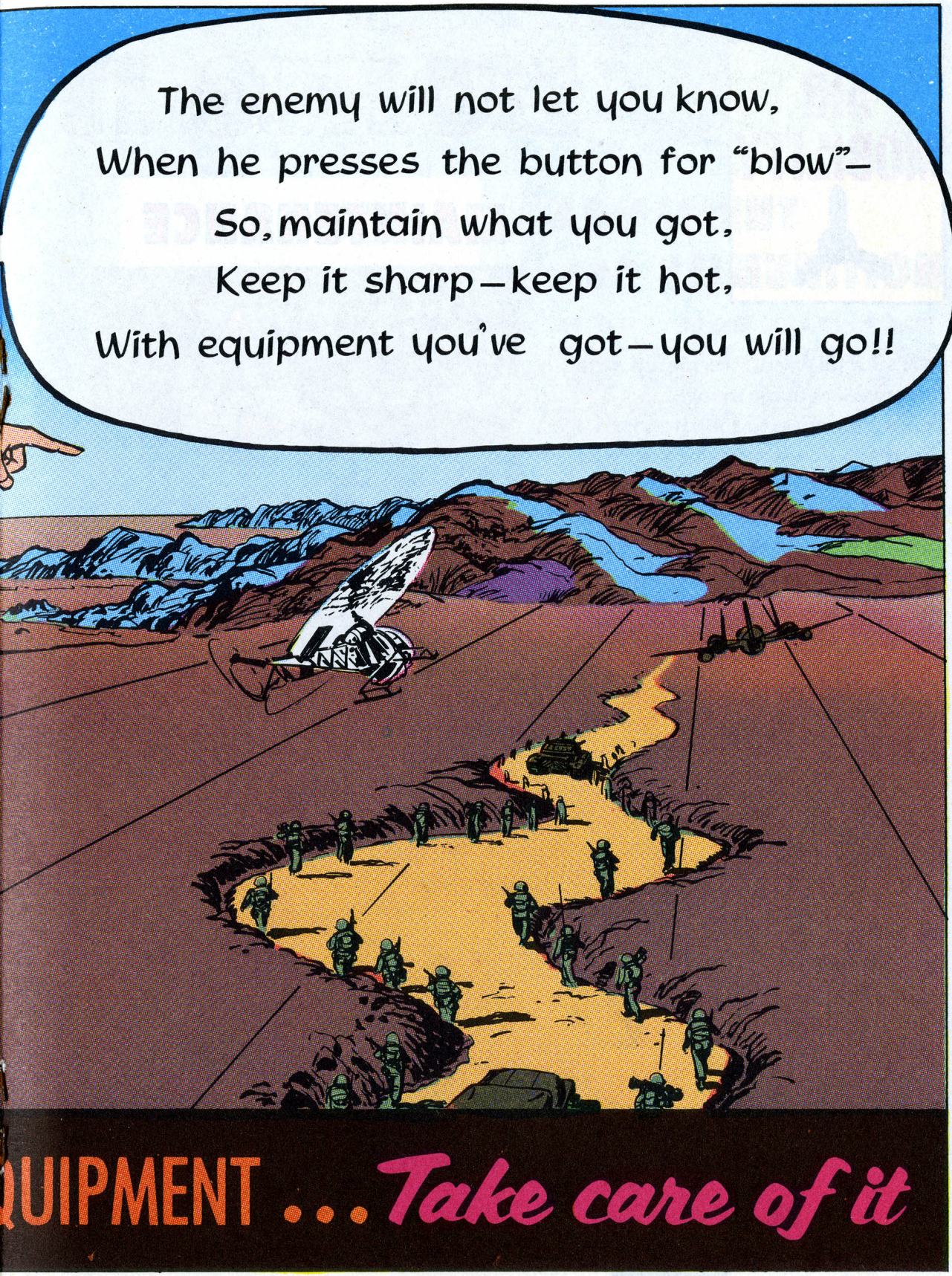
WELL, The world bein' wot it is, and the tactical deployment bein' like we have it . . . The next week Pat and Mike drew a night patrol along the wire. Somewhere about 10 yards from the line . . . they got pinned down by some infiltrators . . . There was no time to do anything but shoot . . . scoot . . . and communicate . . .

PAT . . . His radio's knobs loose and drifting, got off only a feeble signal from th' innards which shoulda had maintenance months ago . . . He also managed to squeeze off a coupla inaccurate rounds from a rust-jammed rifle that looked like a parade piece on the outside . . .

MIKE . . . He made it out fine . . . Gave a good account of himself . . . Rifle (a bit dull on the stock) fired well—radio (paint not so slick) sent off a strong signal . . .

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BU

IF YOU WANT TO DISPLAY THIS CENTERPIECE ON YOUR BULLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.



QUIPMENT ... *Take care of it*

LLETIN BOARD, OPEN STAPLES, LIFT IT OUT AND PIN IT UP.

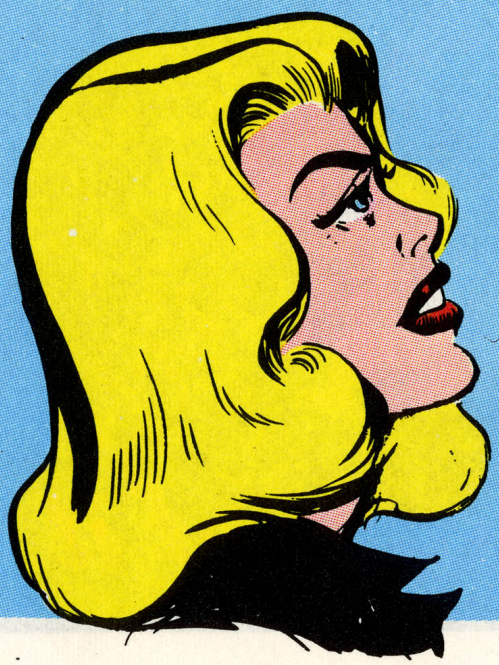
INTERNATIONAL SERVICING SYMBOLS OR . . .

AIR MOBILITY

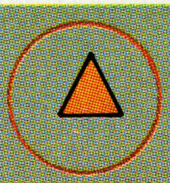
DOING IT

MAINTENANCE

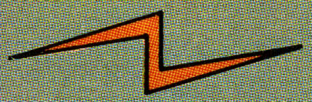
It's kinda hard to come up with an international maintenance language . . . unless you stick to mostly symbols . . . and that's just what came out of an international standardization agreement on aircraft. These servicing symbols are not officially listed in any Army pub yet . . . but if you run into any of them in the future . . . on both U. S. and foreign aircraft . . . here's how you identify them: When you see any of these symbols they should be either right on the item they identify or next to it!



Inspection of De-icing Circuit

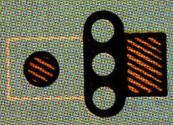


Inspection Of Battery

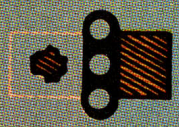


Inspection of Electronic Installation

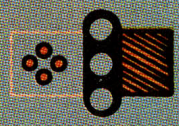
Inspection of Fuel Filter



Hydraulic System Test

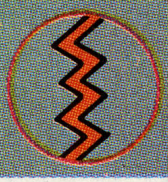


Nitrogen Tank System Test



Cabin Pressure Test

Ignition Plug For Starting Jet Engine



Inspection of Static Connection

INTERNATIONAL SERVICING SYMBOLS OR . . .

DOING IT

AIR MOBILITY

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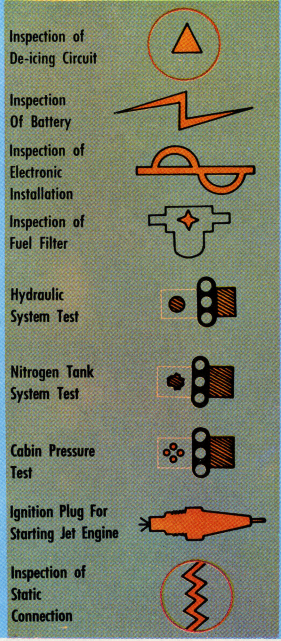
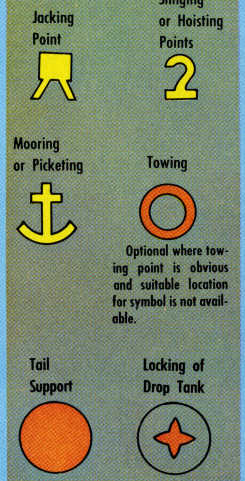
MAINTENANCE



THE NATO WAY

GROUND HANDLING

OUTLINE SYMBOLS IN BLACK OR WHITE ACCORDING TO THE BACKGROUND



ARMAMENT AND AMMUNITION

FUNCTION	MARKED WITH THIS SYMBOL
Gun	
Firing	At shunt for cutting out Firing Safety Control
	At cartridge Case
Feeding of Guns	At cartridge Case
Rockets Control	At Selection Plug
Bomb Racks	At Attachment Point For Hoist

THE NATO WAY

GROUND HANDLING

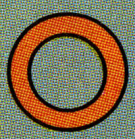
OUTLINE SYMBOLS IN BLACK OR WHITE ACCORDING TO THE BACKGROUND

Jacking Point

Slinging or Hoisting Points

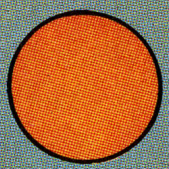
Mooring or Picketing

Towing

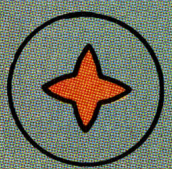


Optional where towing point is obvious and suitable location for symbol is not available.

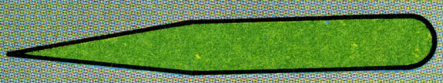
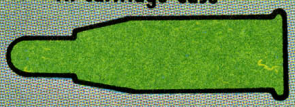
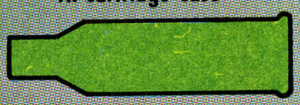
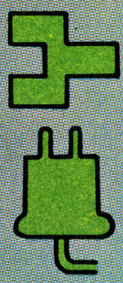
Tail Support



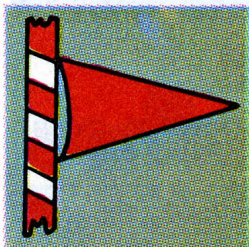
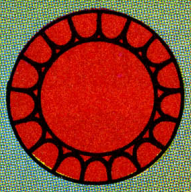
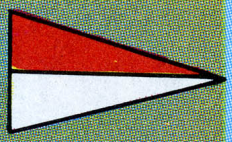
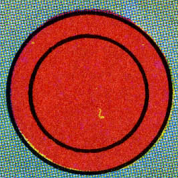
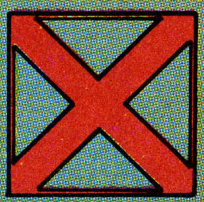
Locking of Drop Tank



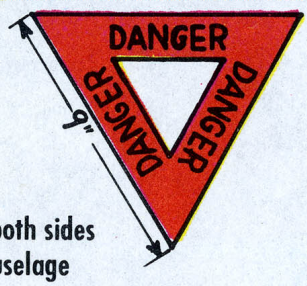
ARMAMENT AND AMMUNITION

FUNCTION	MARKED WITH THIS SYMBOL	
Gun		
Firing	At shunt for cutting out Firing Safety Control	
	At cartridge Case	
Feeding of Guns	At cartridge Case	
Rockets Control	At Selection Plug	
Bomb Racks	At Attachment Point For Hoist	

HAZARDS

MARKING METHOD	FUNCTION	PART	MARKING METHOD	FUNCTION	PART
	Locking of controls and undercarriage	Uprights and Cross Bars		Jet Engine Covering	Tampions
	Locking of Controls and Undercarriage	Position of Uprights and Cross Bars		Rocket Control	Electric Plug
	Pitot Tube Covering	Cover		Antifiring Control	Shunt
	Camera Gun Covering	Camera Gun Cap		Prohibition of Access	Weaker Parts of Aircraft

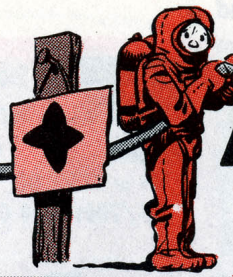
Explosive Actuated Devices



Mark both sides of fuselage

Walkways

Outline symbols in black or white according to the background



FILLING

Color — Black or White According to Background

Refueling

Nato Code No.
Max. Filling Pressure
.....psi..... Kg/Cm²

Rocket Fuels

Nato Code No.
Max. Filling Pressure
.....psi.....Kg/Cm²

Rocket Oxidizers

Nato Code No.
Max. Filling Pressure
.....psi.....Kg/Cm²

Engine Lubricating Oil

Nato Code No.
Max. Filling Pressure
.....psi.....Kg/Cm²

Hydraulic Fluid

Nato Code No.
Max. Filling Pressure
.....psi.....Kg/Cm²

Oxygen (Breathing)

Gas/Liquid
.....psi
..... Kg/Cm²
..... liters
..... quarts

Anti-Detonant or Thrust Augmentation

Methanol %
Water %.....
Nato Code No.
(Methanol Code S-747)

Air Conditioning

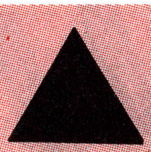
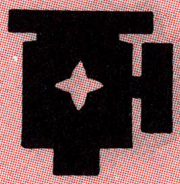
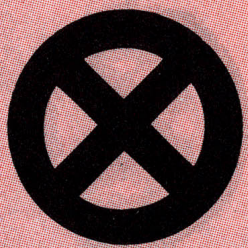
Inerting System

Nitrogen
.....psi
..... Kg/Cm²

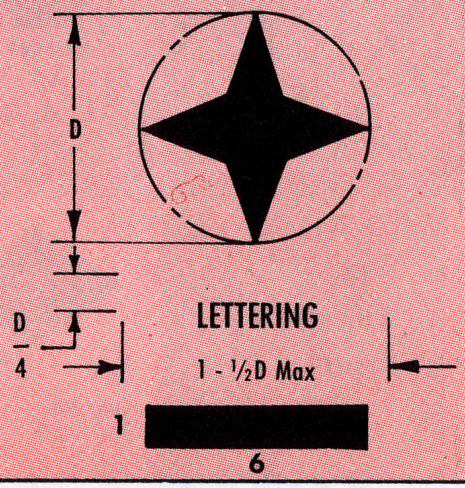
Fire Extinguishing System

Nato Code No.

Color — black or white according to background

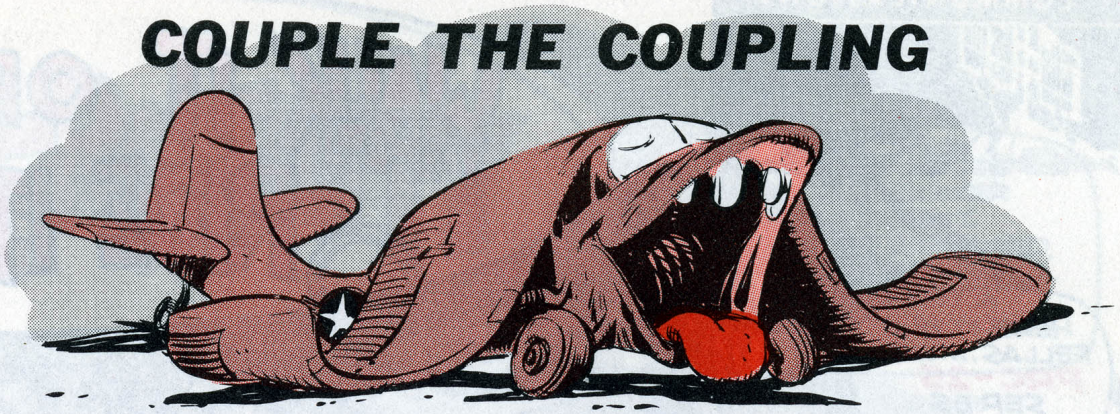
De-icing	 Nato Code No.	External Electrical Connections	. . . Starting . . . Servicing etc. 28v or 115 V DC 115/200V, 400 Cycles
Coolant	Nato Code No. Water --- % Soluble oil--- %	Grounding or Earthing Receptacle	Ground (Earth) Here
		Fuel Tank Water Drain Off	
Pneumatic System	Maximum .....psi .....Kg/Cm²	Pneumatic Starter Connection	 Maximum.....psi.....Kg/Cm²

Lettering which supplements the symbols shall be in the scale 1 to 4 in relation to the symbol.



Dimensions ± .05	
D	D/4
2 inches	½ inch
4 inches	1 inch

COUPLE THE COUPLING

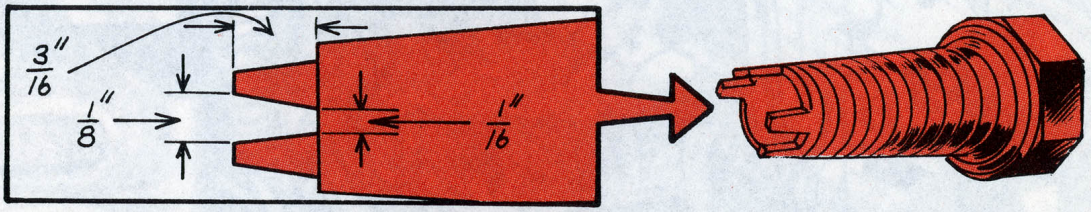


Dear Editor,

Putting a mag on an opposed-type bird engine takes a bit of finagling. Of course, you time it by turning the drive coupling gear until the chamfered (or beveled edge) tooth is indexed to the permanent white line on the mag housing.

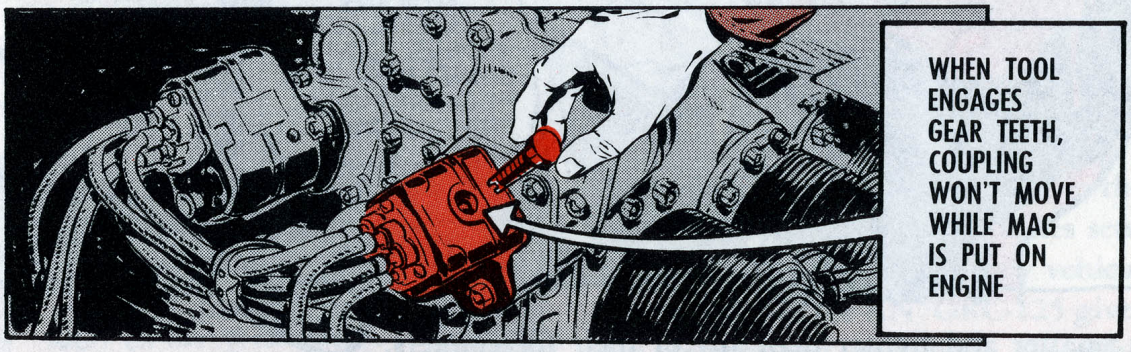
But keeping the coupling from turning while you're putting the mag on the engine is a tricky deal, unless you have some type of a holding tool!

To solve the problem, we made this handy little tool. It's made from an



aluminum reducer bushing, AN 912-4D, FSN 4730-194-0207. Being aluminum, it won't scratch or mar the threads in the plug hole for the coupling gear teeth.

You just grind or file the bushing threads smooth, cut out the four teeth and you're ready for business.



When you go into the mag indexing plug hole with the tool and engage the coupling gear teeth, the coupling won't move a hair while you put the mag on the engine.

Leroy McCormack
AVSCOM
St. Louis, Mo.

(Ed Note—Looks like a good bet. You could make several holders and pass them around for other mechs to use.)

Smaller and lighter than any of their forerunners.

A marvel of electronics with 920 channels squeezed into a small chassis . . . and rarin' to go.

More reliable and versatile than the AN/PRC-8-10's they replace, and with far fewer shortcomings.

That's the word on the AN/PRC-25 series radio sets which are aimed at replacing back-pack sets . . . and more.

COMMUNICATIONS

WALK IT OR RIDE IT...

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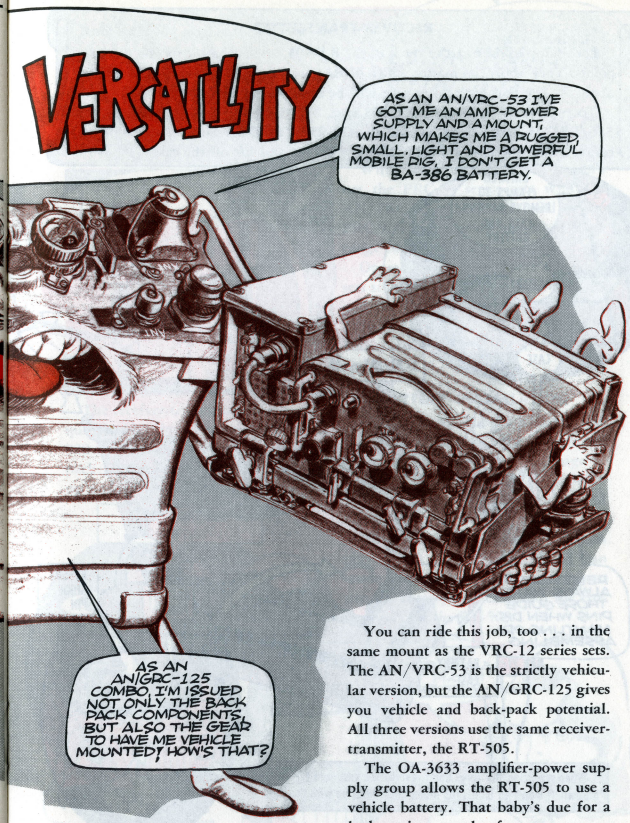
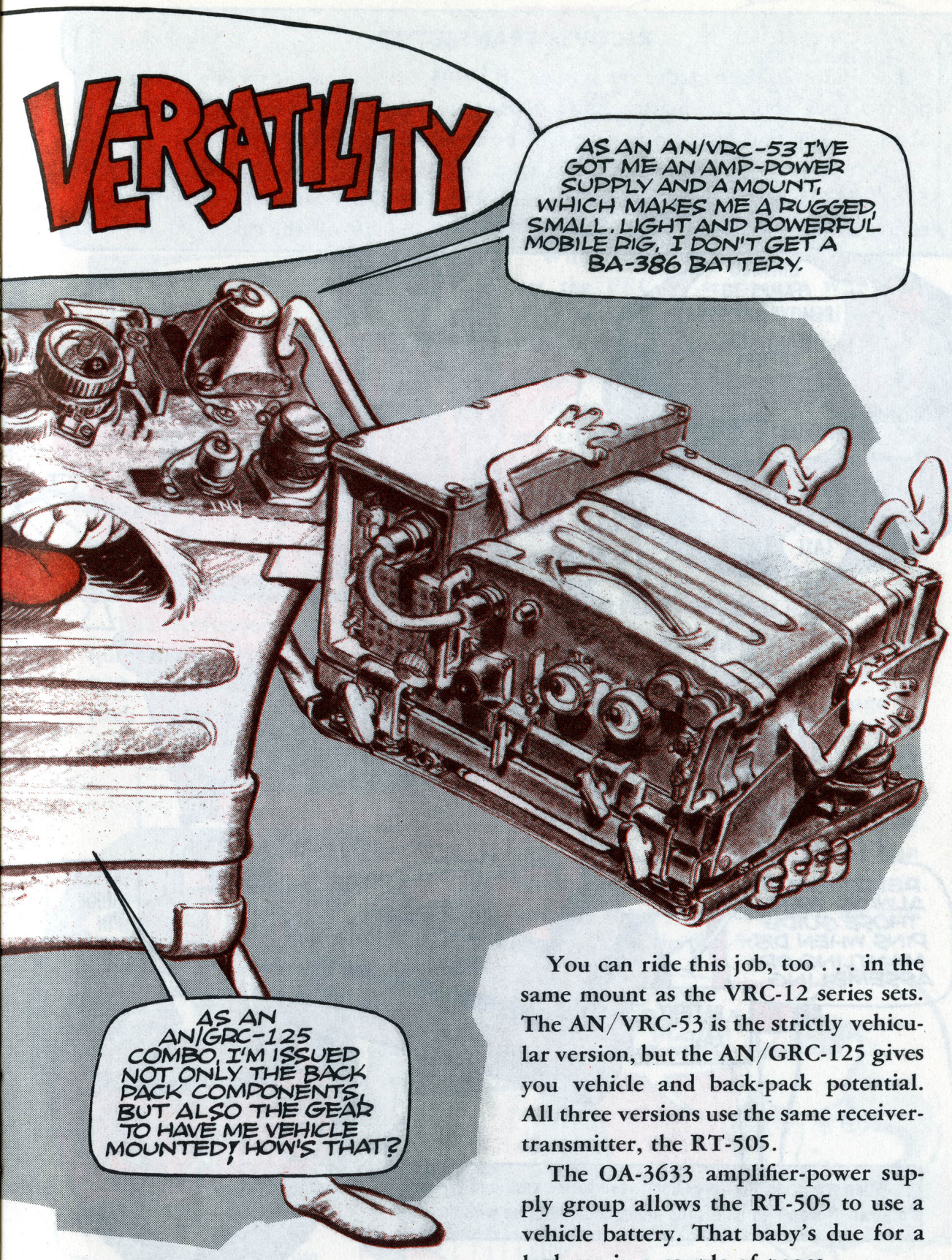
VERSATILITY



You can ride this job, too . . . in the same mount as the VRC-12 series sets. The AN/VRC-53 is the strictly vehicular version, but the AN/GRC-125 gives you vehicle and back-pack potential. All three versions use the same receiver-transmitter, the RT-505.

The OA-3633 amplifier-power supply group allows the RT-505 to use a vehicle battery. That baby's due for a look-see in a couple of pages.

MORE



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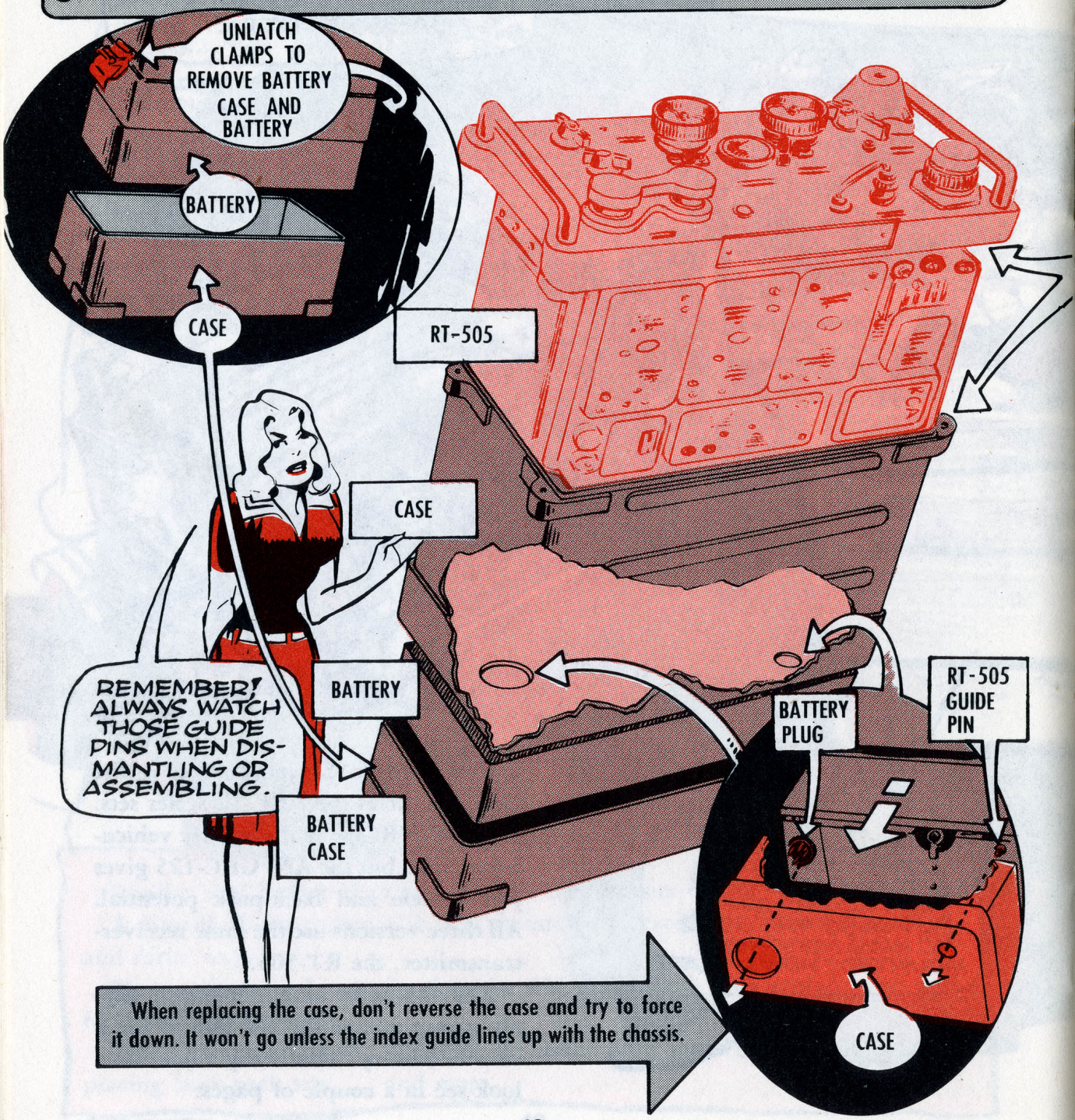
P.S. MORE

RECEIVER-TRANSMITTER

Let's jump to the heart of the sets, the RT-505, and eyeball it for maintenance points. They apply, no matter which of the three sets we're talking about. Here, about 75 per cent of maintenance will be at second echelon.

To remove or replace the RT-505 case, first thing you do is remove the BA-386/PRC-25 battery and its case, the CY-2562/PRC-25. Stand the set on the controls end; loosen the four holddown screws, and lift off the case.



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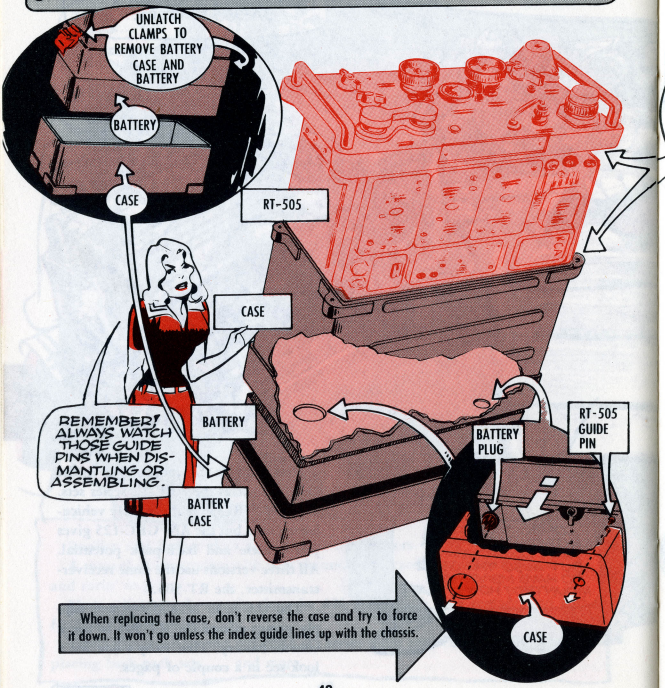
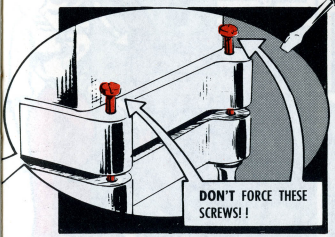
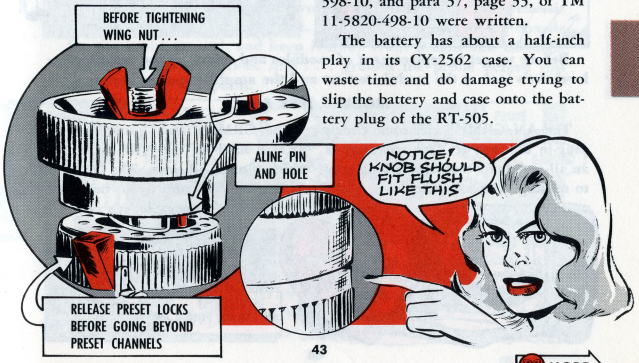


Another point. Be sure the case is flush with the base of the front panel of the RT before you turn the holddown screws. Don't force the screws, or you'll strip 'em. It takes a few seconds extra sometimes to line 'em up right.



The receiver-transmitter does not require calibration, but any two of its 920 channels can be preset (older backpack jobs can't preset). Which brings up a point or two.



While we're on channels, you can't net the PRC-25 series sets with the AN/PRC-8 or the lower band of the PRC-9. They're below the 30-to-76mc range of the new sets.

Operator replacement on the three sets stops at the battery of the PRC-25 and the indicator lamps of the AM-1780/VRC amplifier and the C-2297/VRC intercom control on the VRC-53 and GRC-125.

BATTERY INSTALLATION

Hold it here. There's a change on installing the BA-386 battery, so there's new dope out since para 14, page 7, and para 28, page 17, of TM 11-5820-398-10, and para 37, page 33, of TM 11-5820-498-10 were written.

The battery has about a half-inch play in its CY-2562 case. You can waste time and do damage trying to slip the battery and case onto the battery plug of the RT-505.

MORE

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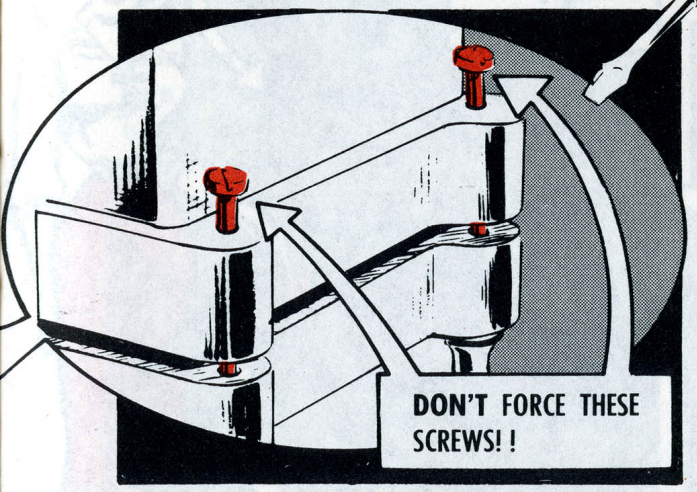

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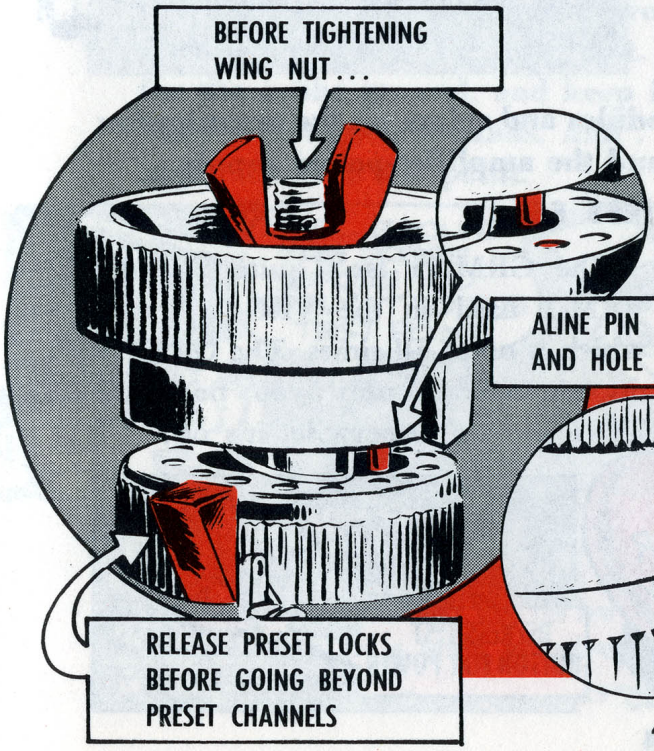

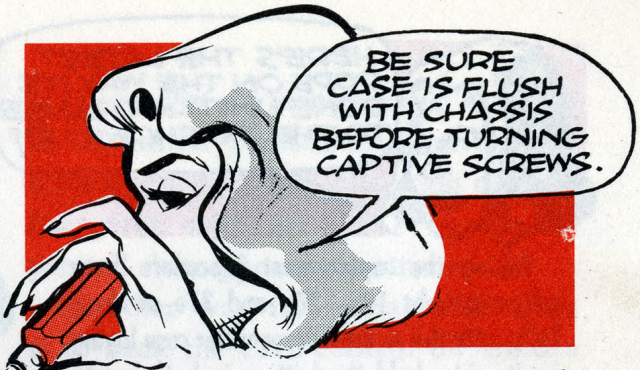

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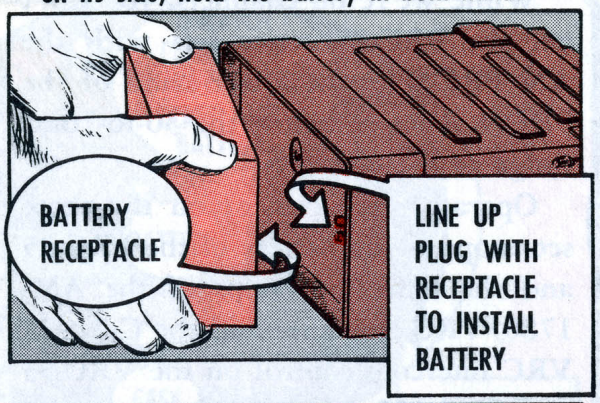
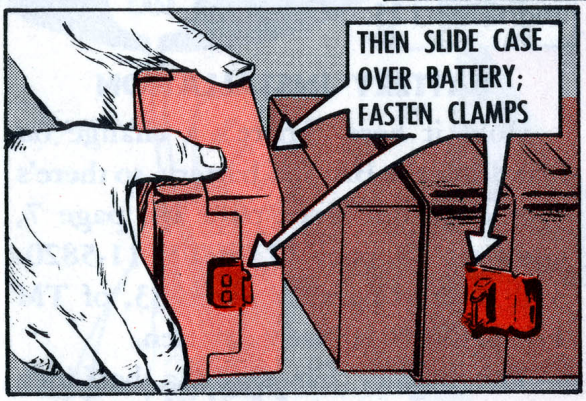
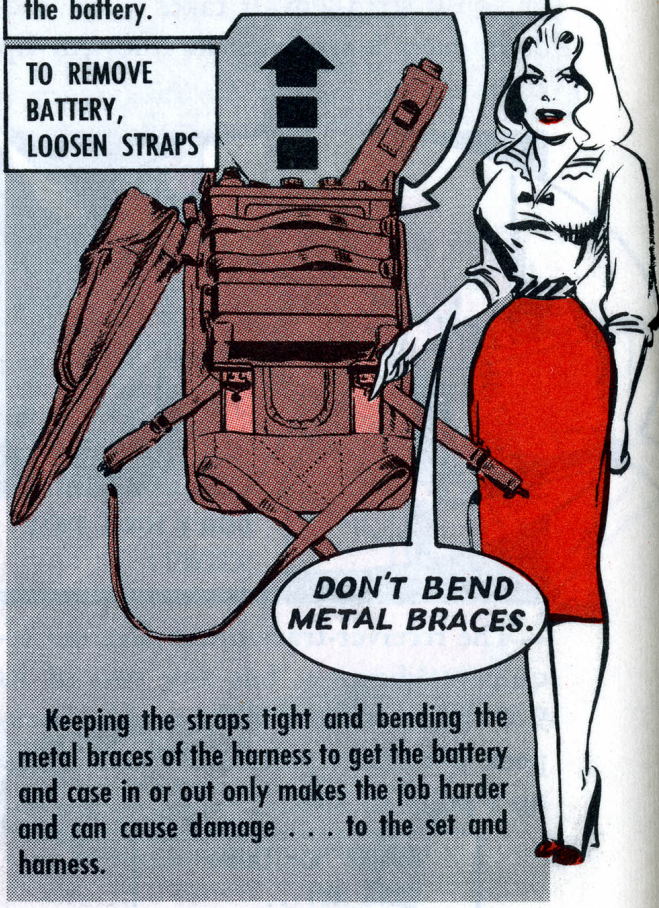
P.S MORE

Taking the replacement procedure from subparagraphs 14e—28e and 37e of those TM's, with the receiver-transmitter case laying on its side, hold the battery in both hands.





To change batteries after you've installed the PRC-25 in the ST-138/PRC harness for back-pack use, lay the harness and set on a flat surface. Loosen the two restraining straps that hold the RT case, and remove or replace the battery.



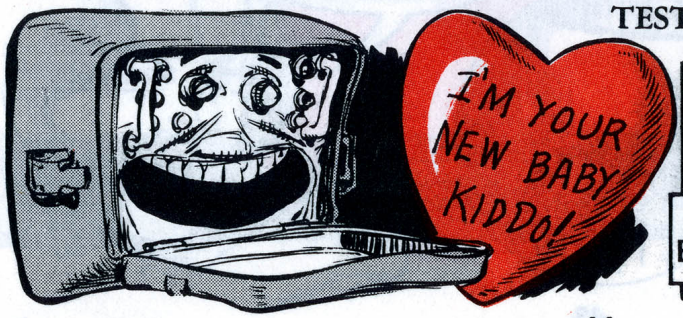
Keeping the straps tight and bending the metal braces of the harness to get the battery and case in or out only makes the job harder and can cause damage . . . to the set and harness.

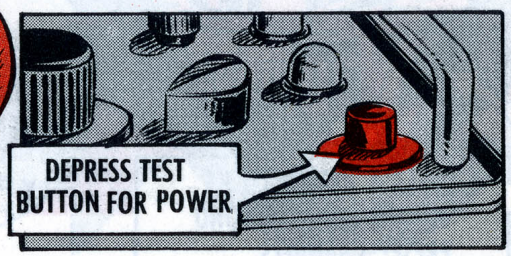
Before we get to replacement of modules and relays on the organization level, let's look at the module test set and the amplifier-power supply.

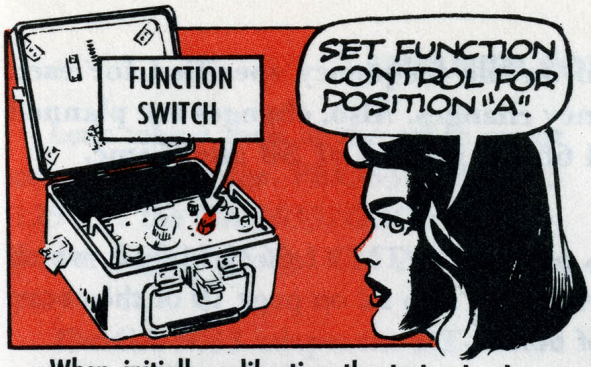
MODULE TEST SET

The AN/GRM-55 electronic circuit plug-in unit test set (for modules) is an all-new baby that'll go a long way to making your job easier.

The GRM-55 isn't quite like the VRM-1 used in the VRC-12 series, which is on at all times. The GRM-55 doesn't operate until you push the TEST switch. Otherwise, it's off.





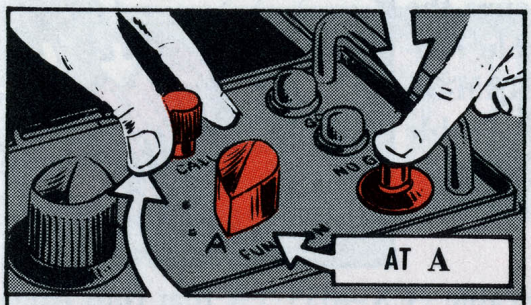


When initially calibrating the test set, at calibration position "A," set the CAL control for a red reading. Then, with a pulsing action (single depressions of the TEST button), approach a green reading slowly.

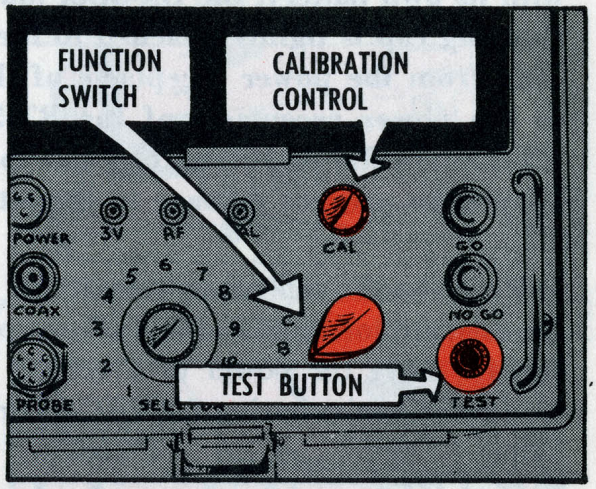
If you get a green reading right off in the initial adjustment, you can get wrong test readings. Also, don't adjust for green with the TEST button depressed throughout adjustment.

Another way for initial calibration is to back the CAL control off from a green reading to red. Then, work up slowly to green again, as outlined.

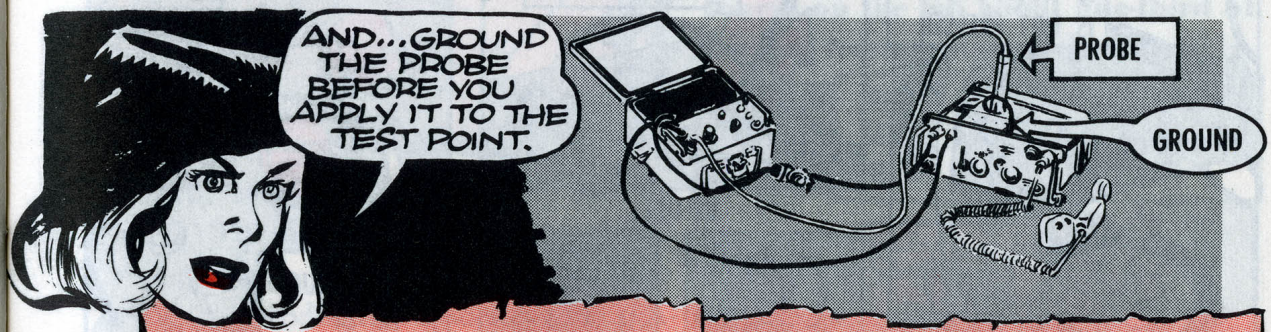
Coupla' other points. Be sure you've made all connections before pushing the TEST button.



Give the CAL control short clockwise adjustments, with at least four seconds between each twist, until the green just comes on. You're then ready for testing.



Also, make sure your probe ground is secured to the radio chassis near as possible to the test point. Use the bare metal of the chassis for the probe ground, and keep it away from hinges and castings. They're not good grounds. And . . . ground the probe before you apply it to the test point.



With the TEST button depressed, wait at least five seconds for each test. There's a function time lag. If you don't wait the few seconds, you can get a wrong indication.

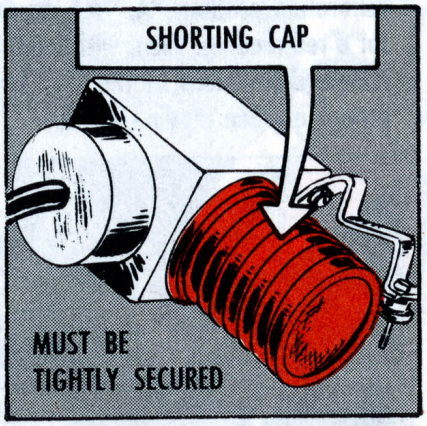
The radio set battery must be at least 11½ volts for correct readings on the test set. If you get a red indication in step 2 of the top chart on page 18 of TM 11-6625-514-12, change your battery.

PS MORE

And don't forget to put your radio on the frequency specified for each test step, because the required frequency changes. Also, changes are planned for measuring some points at 43 and 66mc, instead of 50 and 75mc.

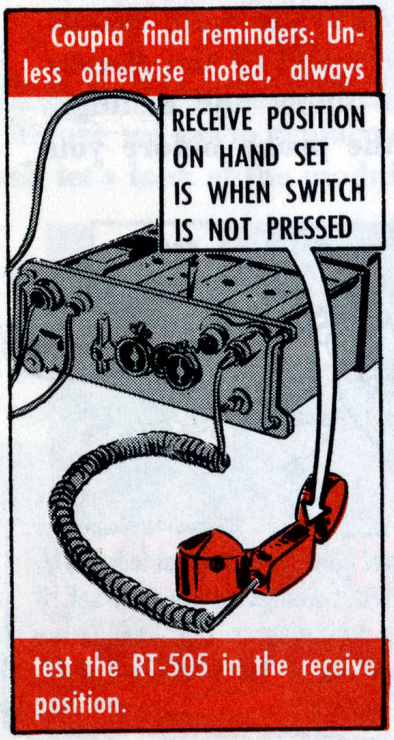
Definite changes are in test step 11, page 18 of TM 11-6625-514-12, which will be 43/66mc instead of 50/75mc. Also, test step 22 on page 19 of the above TM will be changed to 43mc instead of 50mc.

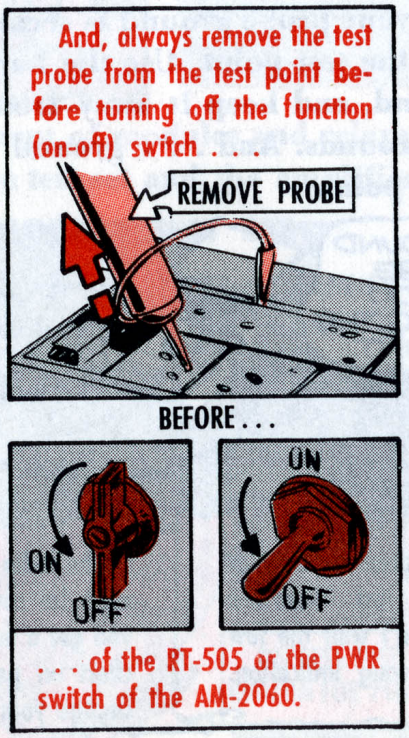
Other changes are planned for the charts, and you'll get the corrections along with your TM's. Look 'em over good.

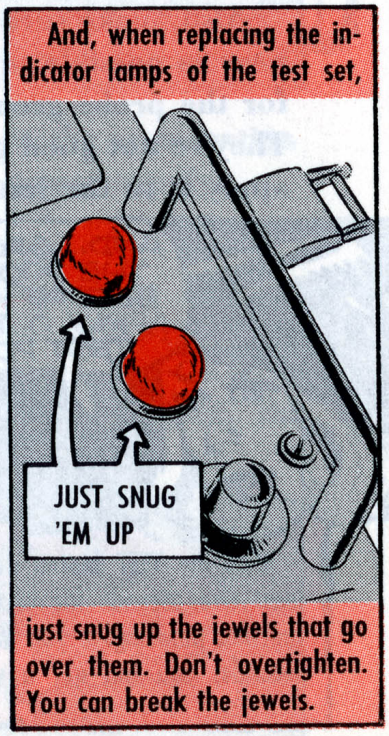


Here's a big point. When testing the PRC-25 with its own battery, the BA-386, make sure the shorting cap is tightly attached to the cable running from the power receptacle of the GRM-55 to the power receptacle of the RT-505 (cable CX-8593/GRM-55). The cap has to be on the adapter to prevent damage to the sets.

You take the cap off only to attach the cable (CX-4655/U) that runs from the adapter to the SET POWER receptacle of the AM-2060 amplifier-power supply, using the power of a vehicle battery. In other words, the cap's off only when you're testing the VRC-53 or GRC-125, with power from the vehicle battery.



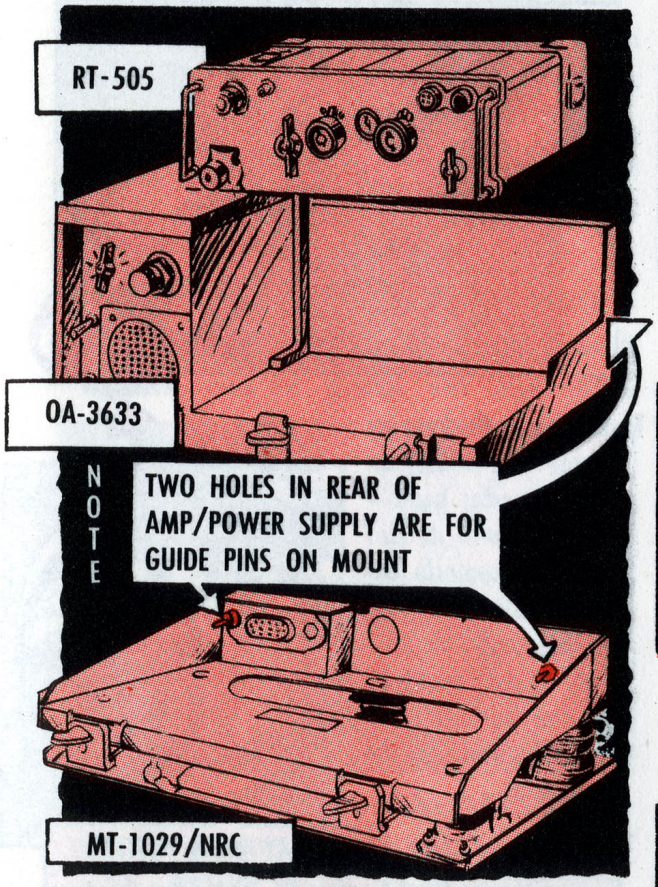




AMPLIFIER-POWER SUPPLY

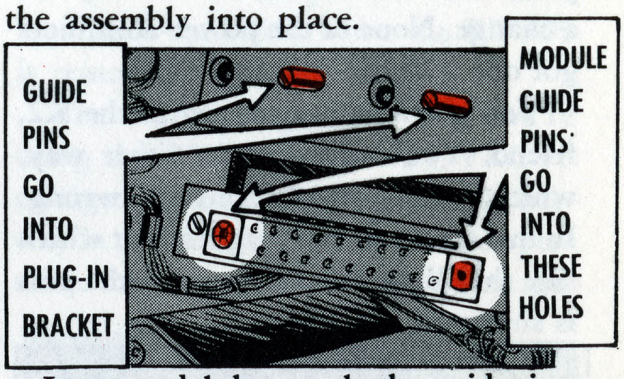
Let's take a look at the other major component of the VRC-53 and GRC-125 . . . the OA-3633/GRC amplifier-power supply group. The AM-2060 is part of it.

The OA-3633 adapts the RT-505 to vehicle installation and provides 13-volt input to the radio set. It also amplifies the audio output of the receiver portion of the RT-505.

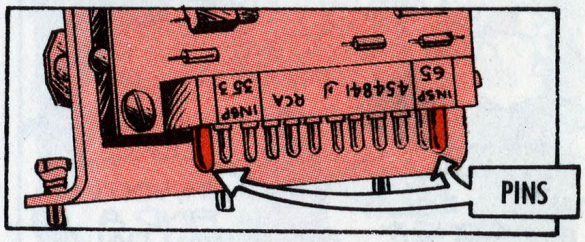


The amplifier-power supply uses the MT-1029 mount discussed in the VRC-12 article.

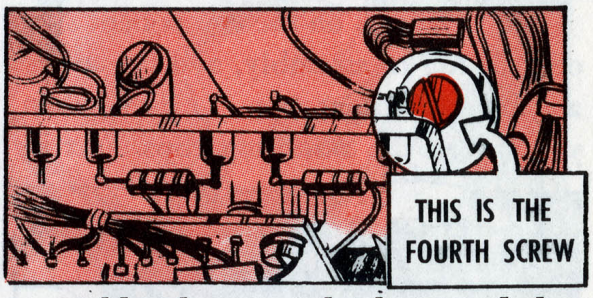
Early production models of the OA-3633 have two guidepins on the metal base of the plug-in assembly as well as two guidepins on each side of the contact pins of the module terminal board attached to the assembly. You have to line up all four pins before pressing the assembly into place.



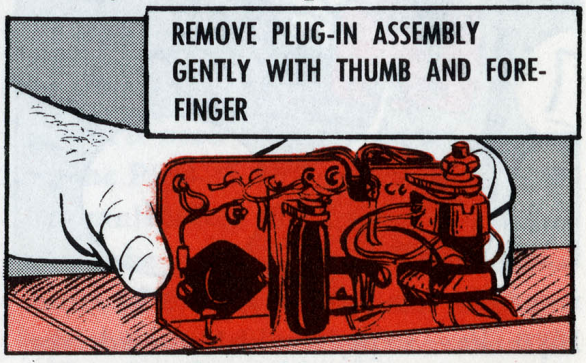
Later models have only the guidepins on the module board.



'Nother point here. There are four captive screws which hold the plug-in



assembly—three on the base and the fourth on the tab about one-third of the way from the top of the assembly.

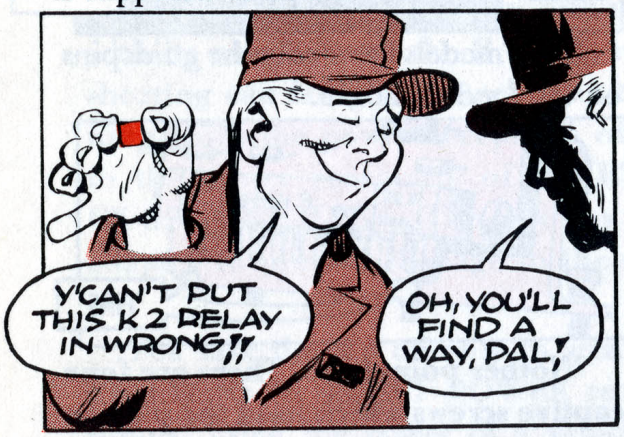


Two hands could tempt you to put too much muscle on it and damage the connector.

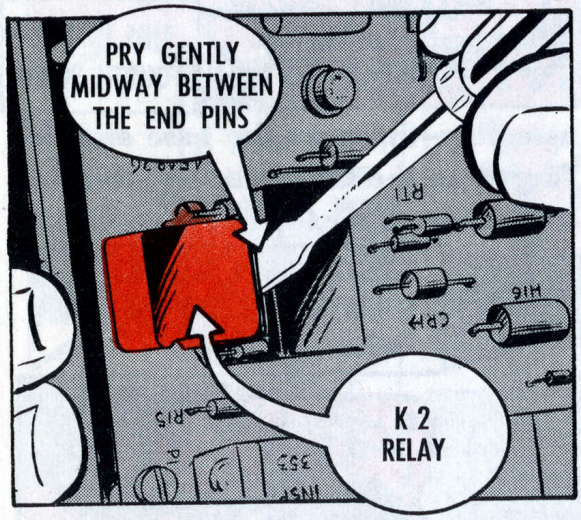
PS MORE

Forget about the K1 relay wherever it's mentioned in the TM. In all cases production models have a K2 relay . . . a change. None of the power-amplifiers got out with a K1 in it.

You got a little bonus with the K2, friend. You can put it in either way, which means you can't put it in wrong. In this case, you can forget about which side that little red dot between the pins is supposed to be on.

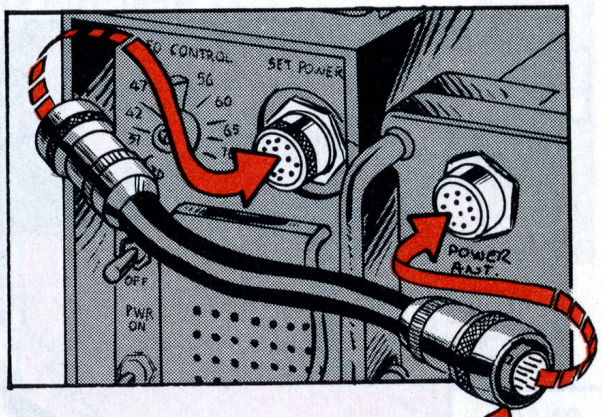


The relay sits on the component side of the plug-in assembly, and it may be a little stiff to get out . . . even when you spread the mounting clips. Fact is,

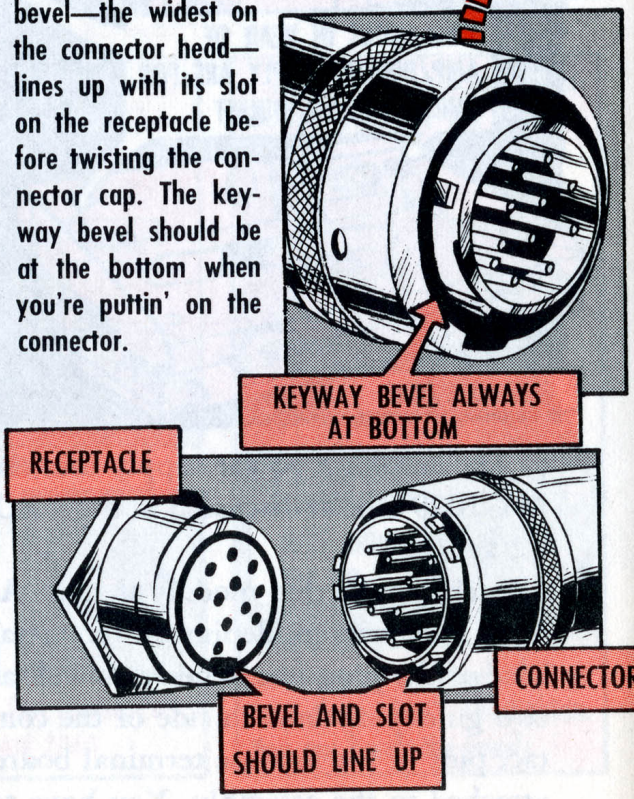


it may be too tight to get out by hand. If you have to pry it with a screwdriver, slip the head of the screwdriver gently between the relay and the connector about midway between the end pins. Pry it easy till you get a slight clearance from the socket, and take it out the rest of the way by hand. Just don't get heavy-handed with the little feller, cause you can damage more than the relay.

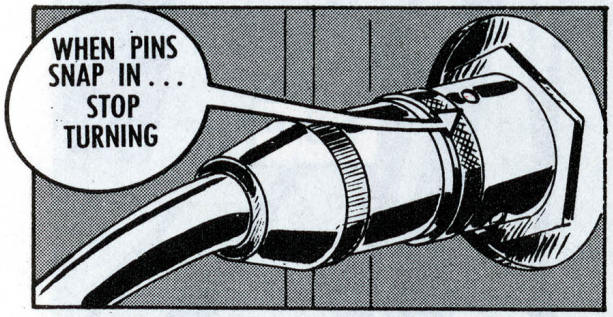
The connector cable (CX-4655/U) to the power receptacles of the AM-2060 and RT-505 should give you no sweat if you follow a coupla' easy steps.



1. Make sure the keyway bevel—the widest on the connector head—lines up with its slot on the receptacle before twisting the connector cap. The keyway bevel should be at the bottom when you're puttin' on the connector.



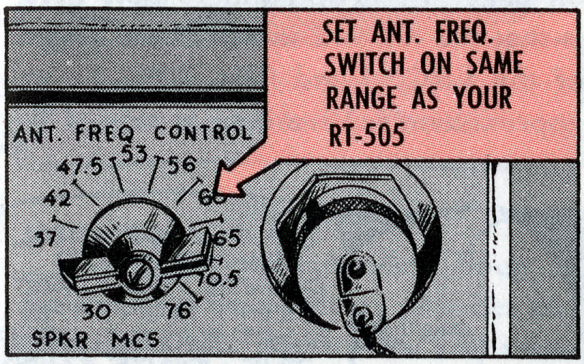
2. The connector head has three holes. Spring-fed pins on the receptacle snap into the holes when you twist the connector fully into place. When you feel the pins snap in, no more twistin's necessary.



The pins keep the connector from backin' off. Also, extra twistin' might just damage the pins and receptacle.

'Nother good one. You can connect either end of the cable to the RT or the amplifier-power supply.

Don't forget that the AM-2060 works along with the RT-505, which means you've gotta set the ANT



FREQ CONTROL on the AM-2060 to the frequency range you're workin' with on the RT-505. That's important.

That caution reminder on page 14, para 14a(6), will be more fully spelled out in a change to TM 11-5820-498-10, but you can pretty much forget it when you're using the battery in the AN/GRC-125 set-up.

In other words, if you're usin' the GRC-125, slip the battery in the RT-505 and install the whole works on the AM-2060. This permits immediate man-pack operation when the RT-505 is removed from the vehicle.

The warning applies when you're using the RT-505 in the AN/VRC-53 configuration. Leaving the BA-386 battery in the case for strictly vehicle operation can cause bad corrosion damage.

TEST SETS, TOOLS

You'll need a coupla' other test sets for the PRC-25 series—the AN/URM-105 multimeter and the TV-7/U electron tube test set. Both are described in the VRC-12 series article. Also eyeball the article for dope on the TK-115/G tool kit, which you need with the PRC-25's.

PS MORE

Now to grab a look at some of the minor components.

CONTROLS

The vehicle-mounted sets of the PRC-25 series use the C-2296, C-2297 and C-2298 controls and the AM-1780 amplifier . . . all used with the VRC-12's. Grab a look at what that article says about 'em on page 9.

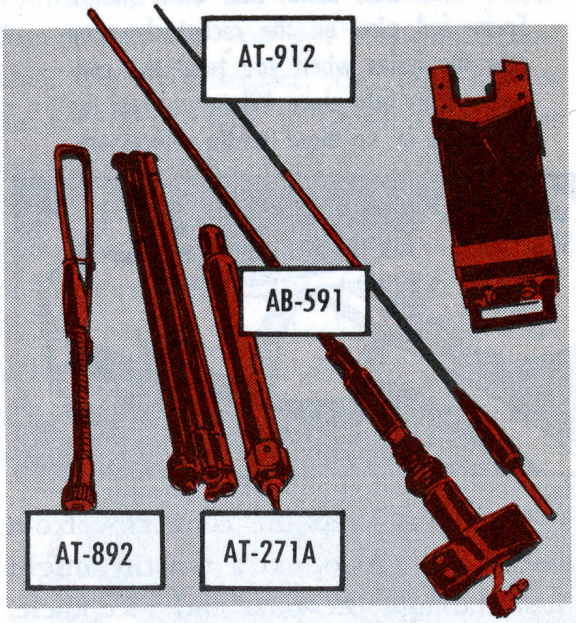
AUDIO ACCESSORIES

Audio accessories for the PRC-25 series are a new breed, so don't try to cross 'em up by slipping in an old H-33 handset, f'rinstance. The H-33 won't work—even if you change its connectors.

The one designed for the set is the H-138/U handset (you'll also use the H-207/U with the C-2296). A few tips will give you top service, since it's an improvement over the H-33. Like, talk close to the mike instead of holding it away from your face.

On some of the H-138's you might get better action by pressing the push-to-talk switch on either edge, rather than the center. You get a high squeal once in a while with a center push.

ANTENNAS



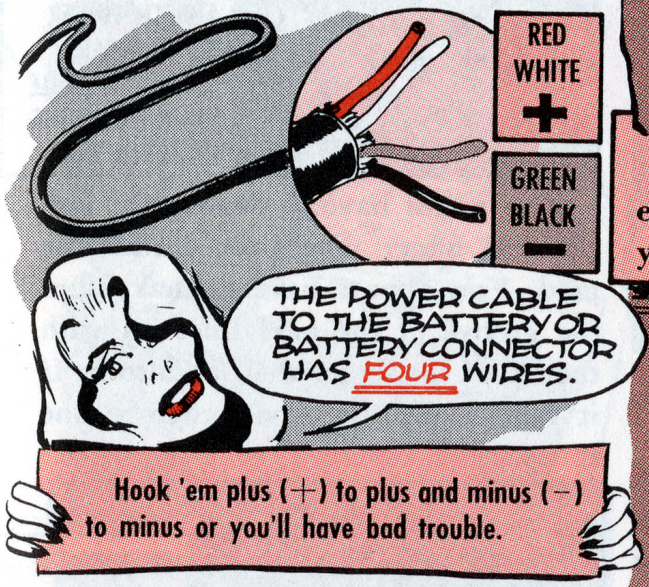
You get three antennas with the PRC-25 series, the AT-271A long whip and AT-892 short job, both for portable use, and the AT-912 and matching unit for vehicular use. For the dope on the AT-912 see the VRC-12 article on page 11. The point to note here is that the AT-912 increases the range of the VRC-53 and GRC-125 . . . to approximately 10 miles.

Plus this caution: Don't try to use the AT-271 antenna of the PRC-8 thru 10 sets. It won't fit the antenna mount on the RT-505, which means you gotta use the AT-271A.

You might also take a look at the VRC-12 article for maintenance helps with the MT-1029 mount used by the VRC-53 and GRC-125 . . . page 12 .

CABLES

Be extra careful when connecting the power cable (CX-4720) from the mount to the vehicle battery. Hook it up wrong and you'll give a king-sized bellyache to the set, as well as damaging the amplifier-power supply.



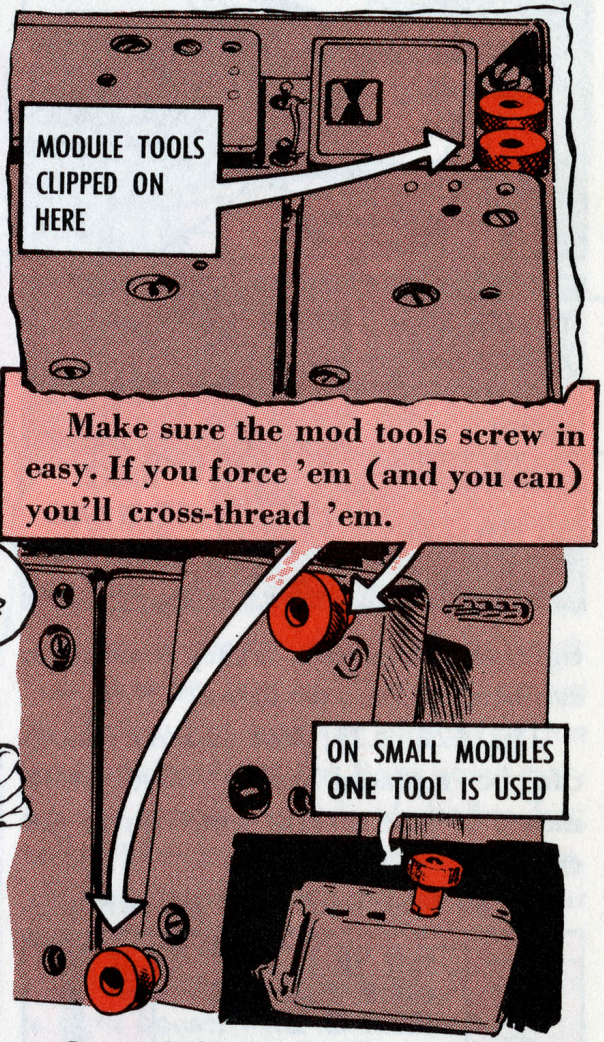
GENERAL

Coupla' general reminders. Snug up the screws periodically on switches and controls; watch your cables and audio cords for cracks and breaks; make the routine antenna checks.

And never, never, start your vehicle with the radio sets turned on. Do it and you'll damage the power amplifier . . . and maybe the set. Turn the power off at both the set and the amplifier-power supply before you hit the ignition switch of your vehicle . . . just to play it safe.

MODULE TOOLS

You get two module pullers (held by snap-in brackets at the top, right rear of the RT-505 chassis), which take the sweat out of pullin' mods in the RT-505.



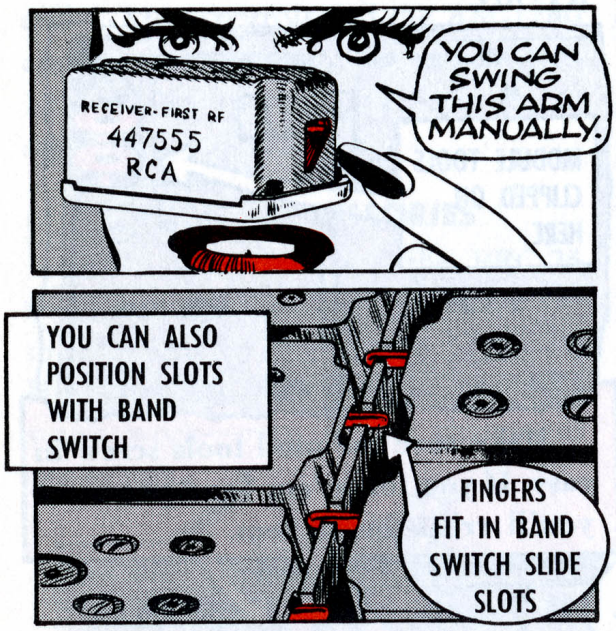
General tips on pulling mods listed in the VRC-12 article apply just as well to the mods in the RT-505. Eyeball 'em, if you will.

One note here before you get into actual replacement of the modules and relays in the RT-505. You can test the A9 and A20 mods, but if they're bad, they've gotta be replaced by third echelon 'cause they generally need alinement.

PS MORE

PULLING MODULES

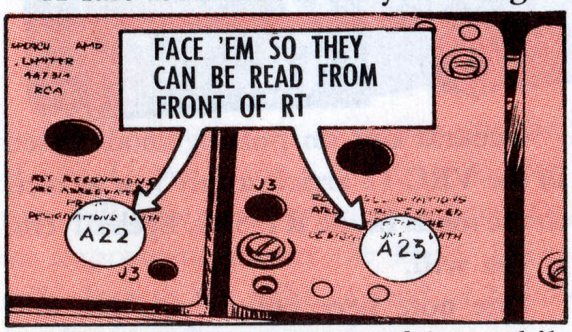
The arms of the A2, A3, A4, A6, A7 and A8 mods fit into slots on the band switch slide. So . . . make sure the arms are in the slots before you begin



tightening the mods. If they're not, you can bend or bust the arms.

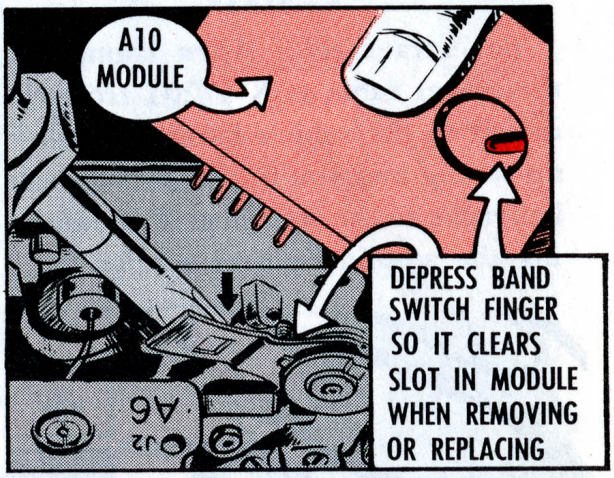
The A22, A23, A24 and A25 mods can be replaced either way, which means if you reverse 'em, you've got troubles.

A fast look here'll set you straight.

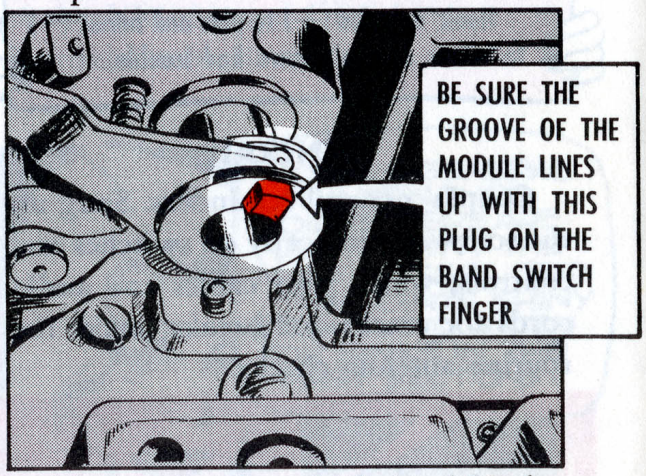


Which means you can read 'em while lookin' at the control panel. Same goes for the mods on the bottom of the RT, the A2 thru A20. Face 'em to the front. You'll find 'em a lot easier to install that way.

To lift the A10 mod from its mother board you have to depress the band switch mechanical finger so it frees itself from the groove in the module. When it's clear, pull the mod.



You might have to depress the mechanical finger when you install the mod. You always have to make sure the groove of the mod lines up with the tip of the finger that fits into it. If it doesn't, flip the band switch to line it up.

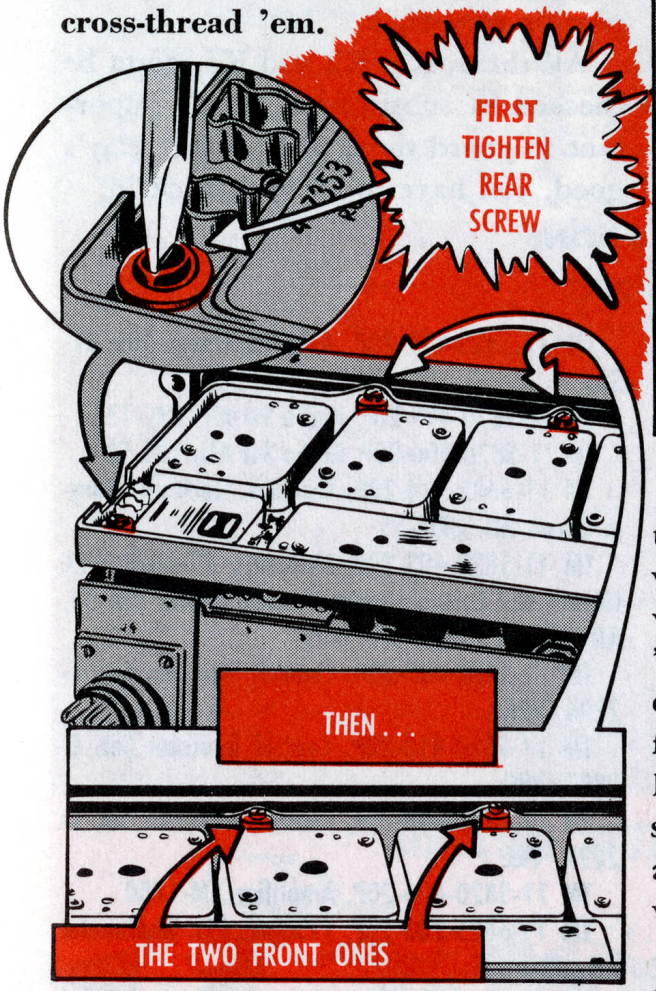


The mother board of the A21 thru A25 mods can give you a twitch or two if you let it.

■ **Like with the three holddown screws. Stop turnin' 'em as soon as you feel the spring tension release. A coupla' more turns could bring 'em**

all the way out, which means you could lose the springs and screws. Besides, they're tricky birds to replace.

■ When you're securing the mother board, push down on the screws just enough to relieve the spring tension. Too much force could cross-thread 'em.

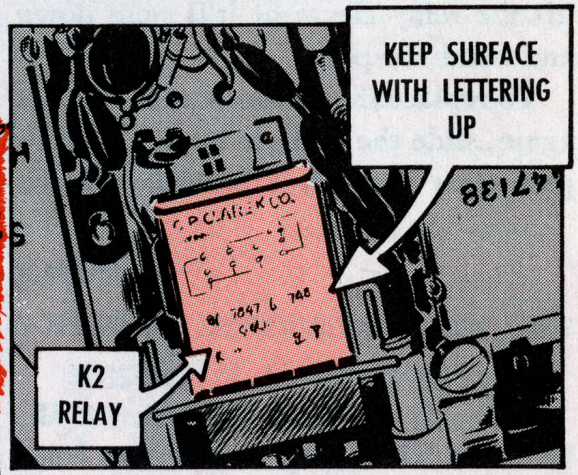


■ You may have to wiggle the board slightly to get the rear screw in, but there's just enough of an offset to make it downright hard for that rear screw if you secure the two front ones first.

REPLACING RELAYS

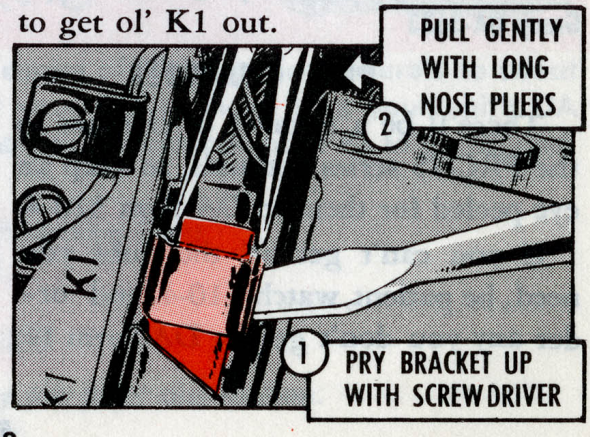
Two of the three relays you work with in the RT-505 are the "no sweat" type, providin' you're easy on the pins so you don't bend 'em.

Keep the red dot between the pins of the K2 and K3 relays to the left front of the set when you install 'em, and the red dot of the K1 relay toward the top of the set. That keeps 'em in the right position. Or, keep the side with the lettering on it either up or out. Same deal, position-wise.



Pulling K2 and K3 straight out of their sockets is a snap, but watch it when you're pushin' 'em in. Too much wiggle or muscle can bend or break 'em. Best bet is to put the relay on top of the bracket with the pins a fraction from their receptacles. Press down easy-like to spread the ends of the bracket; stop when the bracket snaps into place, and push the relay straight in. That way you've got it made.

The K1 is a different cat. It lives in a tight house, with almost no room to work. You gotta almost get acrobatic to get ol' K1 out.



MORE

Easiest and least damaging is to pry the top bracket with a screwdriver, grip the end of the relay lightly with long nosed pliers and pull back slowly till K1 disconnects from its socket.

Keep slight pressure on the bracket 'til the relay clears or it'll snap down and bend the pins.

To replace the K1 pry up the bracket again, slide the relay in by hand till its pins clear the lower bracket, and let both bracket arms snap on the relay case. Then, push the relay straight in. Watch those bracket arms, cause they butcher the relay pins.

It requires some patience, but it's about the only way you can get the relay in or out without damaging the pins or receptacle.

All three, K1, K2 and K3, gotta be checked by substitution, so it's important to guard those pins. If the relay's good, you have to shove it back in.

PUBLICATIONS

YOU'LL NEED THESE PUBLICATIONS FOR THE PRC-25 SERIES:

TM 11-5820-398-10 and -20, AN/PRC-25

TM 11-5820-498-10 and -20, Radio Sets AN/VRC-53, AN/GRC-125 and Amplifier-Power Supply Group OA-3633/GRC

TM 11-6625-203-12, Multimeter AN/URM-105

TM 11-6625-274-12, Test Sets, Electron Tube TV-7/U (inc. 7a, b, d)

TM 11-6625-514-12, Test Set, Electronic Circuit Plug-in Unit, AN/GRM-55

TM 11-5820-401-10 and -20, Radio Sets AN/VRC-12 and AN/VRC-43 thru AN/VRC-49

TB 11-6625-274-12/1, Test Set, Electron Tube, TV-7/U (17 Jan 62)

These parts manuals are necessary for the PRC-25 series, and the 20P's on the new equipments will be illustrated:

TM 11-5820-398-20P, Radio Set AN/PRC-25

TM 11-5820-402-20P, Antenna AT-912/VRC (inc. Mounting-Matching Unit MX-2799)

TM 11-5820-495-20P, Amplifier-Power Supply Group OA-3633

TM 11-5820-497-20P, Receiver-Transmitter RT-505

TM 11-5820-499-20P, Radio Set AN/GRC-125

TM 11-5820-500-20P, Radio Set AN/VRC-53

TM 11-6625-514-20P, Test Set, Electronic Plug-in Circuit AN/GRM-55

TM 11-5820-403-20P, Mounting MT-1029/VRC (Mount and Controls parts manuals are for VRC-53, AN/GRC-125 radio sets only)

TM 11-5820-405-20P, Control, Intercom Set, C-2296/VRC

TM 11-5820-410-20P, Control Intercom Set, C-2297/VRC

TM 11-5820-408-20P, Control, Intercom Set, C-2298/VRC

TM 11-5820-406-20P, Amplifier AM-1780

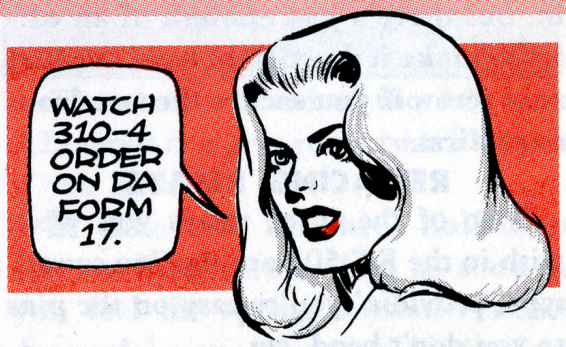
TM 11-6625-203-20P, (15 Dec 61), Multimeter AN/URM-105

TM 11-6625-274-20P, Test Set, Electron Tube, TV-7/U

PUB CHANGES

There'll be a number of changes to the PRC-25 series manuals, so keep an eye peeled for them in DA Pam 310-4.

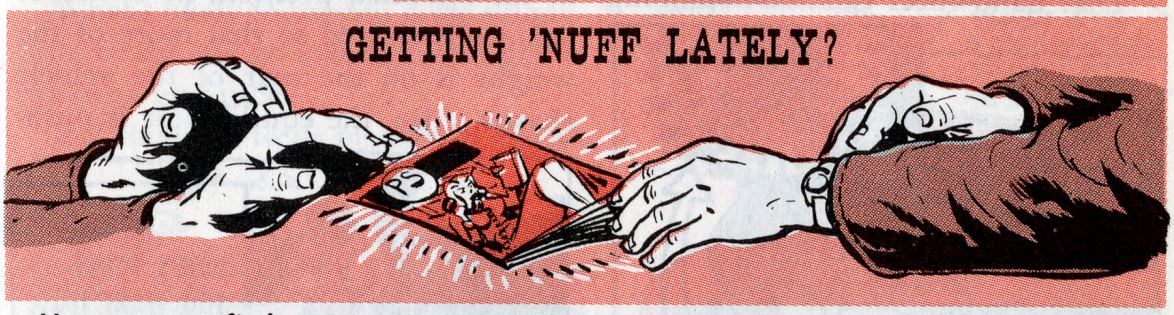
If you can't get all the pubs you need, be patient, watch 310-4, and order any you don't get on DA Form 17.



A selected list of recent publications of interest to Organizational Maintenance Personnel. This is a list compiled from recent Adjutant General's Distribution Center Bulletins. For complete details see DA Pam 310-4 with latest changes.

TECHNICAL MANUALS

TM 3-1040-220-20P & -35P, Jul Dispenser, Riot Control M5.
TM 3-4240-240-12 & -25P, Jul Heater, Air, Electric, Filter Unit M3.
TM 5-785, Apr Engineering Weather Data.
TM 5-2410-208-20P, Jun Tractor, Full Tracked, Low Speed, Diesel; Medium Drawbar Pull; Oscillating Track; 74 In. Gage With Attachments (International Harvester Model TD20 [201]).
TM 5-2510-200-25P, Jul Body Truck Bridging.
TM 5-2805-200-25P, Jul Outboard Motor, West Bend Model G35912.
TM 5-3431-207-25P, Jun Welding Machine Arc, Libby Model LA300.
TM 5-3431-208-15, Jul Welding Set, Arc, Linde Model SWM-9-A.
TM 5-3655-201-20P, Jun Conversion and Storage, Carbon Dioxide.
TM 5-3805-202-10 & -20, Jun Loader, Scoop, Clark Model 175A-M23.
TM 5-3805-212-20, Jul Intrenching Machine, Unit Rig Model 4262.
TM 5-3820-200-20P, Jun Auger, Earth, Skid Mounted: Gasoline Driven: 9 ft. Boring Depth (Texoma Enterprise, Jaques' Model TJ254).
TM 5-3820-226-20P, Jun Crushing and Screening Plant, Iowa Model 2A.
TM 5-3825-203-20P, Jun Distributor, Water, Tank Type Gasoline Driven Truck Mounted; 1,000 Gallon (Pryor Models).
TM 5-3895-219-10, Jun Mixer, Concrete, Model 165M.
TM 5-3895-243-10, Jun Gen Set, 30KW, 30-US-16936.
TM 5-4110-204-15 & -25A, Jun Refrigerator, Army Model SPE42.
TM 5-4320-200-25P, Jul Pump, Centrifugal.
TM 5-4320-208-25P, Jun Pump, Centrifugal: Gasoline Driven, Frame Mtd.; MIL-P-52109 (CE) (All makes and models).
TM 5-4930-200-10, Jul Lubricating and Servicing Unit, Gray Company, Model 251-315.
TM 5-6115-248-20, Jul Generator Set, 30 KW, Model 30-US-16936.
TM 5-6675-231-15, Jun Theodolite, Wild Heerbrugg Model T-3.
TM 9-1190-232-15, Jun Weapons System, UFD XM41.
TM 9-1410-250-12P/1/1, Jul Nike-Hercules, Nike-Hercules (Imp), Missile Operation and Maint.
TM 9-1440-250-12P/6/1, Jul Nike-Hercules, Nike-Hercules (Imp), Spt & Svc Equip.
TM 9-2320-213-10, Jul Truck, ½ Ton M274 and M274A1.
TM 9-2350-224-20, Jun Tank, Combat, M48A3.
TM 9-4935-304-12P/1, Jul Sergeant, Test Equip (Ord).
TM 9-4935-350-14/11, Jul Redstone Test Equip (Ord).
TM 9-5044-12, Apr Corporal, Ground Handling Equip.
TM 9-5048-12, Mar Corporal, Ground Handling Equip.
TM 10-500-25-2, Jun Rigging M212 Road Grader.
TM 10-1670-203-23, Jun Parachute, Cargo Extraction.
TM 10-1670-224-23P, Jul Parachute, Personnel, 28 Ft., Nylon Canopy.
TM 10-3930-204-20P, Jun Truck, forklift, MHE 160.
TM 10-3930-213-20P, Jun Truck, forklift, MHE 149.
TM 10-4230-201-23P, Jun Chamber, Fumigating.
TM 11-5805-335-15P, Jun Panels, Circuit Termination SB-1527/FT and SB-1528/FT.
TM 11-5805-336-15P, Jun Panels, Relay Telegraph SB-1529/FT & SB 1530/FT.
TM 11-5820-286-20P, Jun Radio Sets AN/SRC-8, -8X, -8XX, -8Y, -8Z and -8AZ.
TM 11-5820-480-12P, Jun Mod-Power Supply Group AN/URA-28A.
TM 11-5820-482-12P, Jun Amplifier-Power Supply Group AN/URA-36A.
TM 11-5820-483-12P, Jun Cabinet, Power Supply CY-3577/FRT-52A.
TM 11-5820-489-20P (Corr Copy), Apr Control Group AN/GRA-6.
TM 11-5820-502-20P, Jun Radio Receiver R-109/GRC.
TM 11-5820-508-20P, Jun Radio Receiver R-388/URR.
TM 11-5840-211-20P, Jun Radar Set AN/PPS-4.
TM 11-5850-201-20P, Jun Signal Lamp Equip SE-11 and SE-11A.
TM 11-5965-257-15P, Jun Handset H-138/U.
TM 11-6115-233-15P, Jun Generator Set, Gasoline Engine, Trailer Mounted PU-456/G.
TM 11-6125-204-20P, Jun Motor Generatass PU-235/U & PU-235A/U.
TM 11-6125-238-20P, Jun Inverter-Vibrator PP-1703/U.
TM 11-6130-219-20P, Jun Rectifiers, Power Unit PP-34/MSM, PP-34C/MSM, and PP-34D/MSM.
TM 11-6625-303-20P, Jun Test Sets, Electrical Power AN/UPM-93-93A & AN/UPM-100.
TM 11-6625-454-12P, Jun Spectrum Analyzer Group AN/URM-116A.
TM 11-6625-488-20P, Jun Preamplifier AM-3148/USM.
TM 11-6625-502-10/4 & 10/5, May Test Set, Elec Circuit Plug-In Unit A/GSM-51, Dig El Card Test Procedures for Radar Processing Ctr OA-2308/MSQ-28, Weapons Monitoring Center OA-2309/MSQ-28, and Elec Shop, Semitrailer Mtd AN/MSM-34.
TM 11-6625-502-24, Jun Test Set, Electronic Circuit AN/GSM-51.



Has your outfit been getting enough copies of PS Magazine? There's no sweat in getting as many as you need. Just get your CO to make sure your unit's DA Form 12-4 order has asked the Pubs depot for enough copies of PS to go around. The 12-4 goes thru channels to:

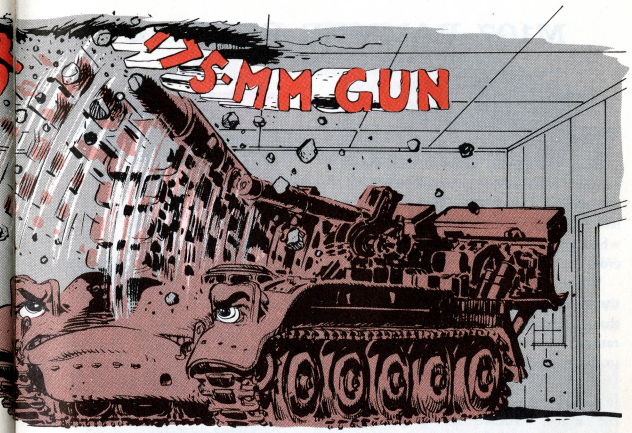
Adjutant General Publications Center
2800 Eastern Blvd.
Middle River
Baltimore, Md. 21220

PS is mailed direct to your outfit by pin-point distribution.

FIREPOWER

M107 175-MM GUN

DANGER

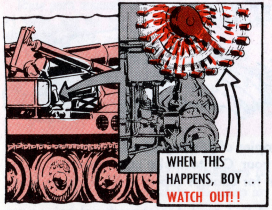


So you got a shiny, new, M107 SP 175-mm gun? Or did you draw an M110 8-in SP howitzer?

Either way, you got yourself a mighty potent pop gun.

One thing you have to watch, though, or you'll wind up bad hurt or even a little bit dead . . . that thing is the manual elevation handwheel near the right gunner's seat.

That handwheel can start spinning



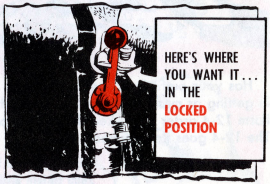
all by itself and when that happens it is guaranteed to make hamburger out of any human-type flesh that gets in the way.

You can prevent this by making one simple little rule for yourself:

Always have the travel lock in the locked, travel, position not only when you are traveling, but whenever you retract the tube or place the tube in battery, either one.

Look for the warning on this in the newest TM 9-2300-216-10.

Here is the wherefore of it all . . . when the M107 or M110 gun tube is in the retracted position, its center of balance is shifted so that more of the weight is on the rear of the vehicle chassis. Also, the equilibrator is push-



ing up on the front part of gun tube.

If your travel lock is holding the gun tube you've got no worry, Murray.

But if that heavy-like-a-mountain gun tube is hanging there with nothing to hold it but the control handle brake on the manual elevation handwheel, you should'a stood in bed, Fred.

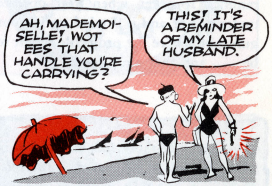
What's likely to happen is the skinny little brake lets go and then you got a runaway gun tube.

It'll shoot up to its maximum eleva-

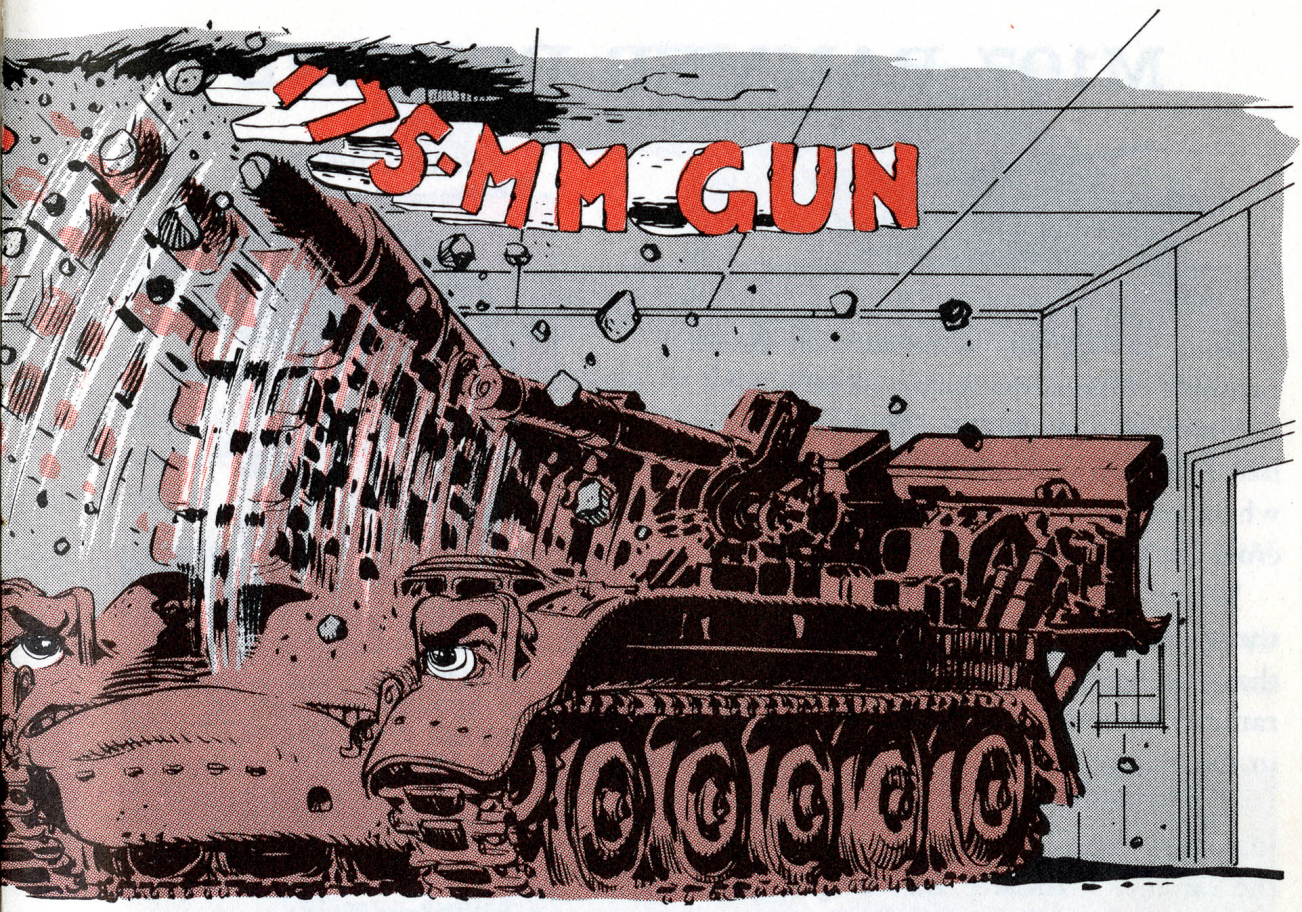
tion—and probably right through the ceiling if there's a ceiling in the way.

Instead of the manual elevation handwheel raising the gun tube, the gun tube raises by itself, driving the manual elevation handwheel as it goes . . . and if you happen to be in front of the handwheel at the time you're bound to get hurt.

So why let your wife have all the fun of being a rich widow?



Keep that travel lock locked when you retract the gun tube or when you place it in battery and you'll have no statement of charges for damaging government property, either the manual elevation handwheel, or that even more valuable property—yourself.



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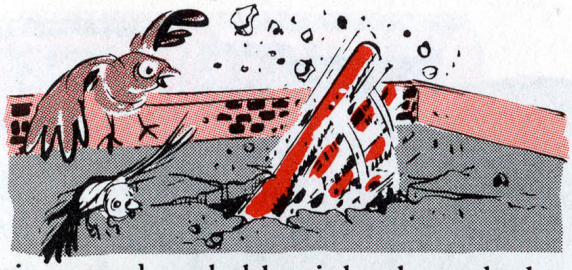

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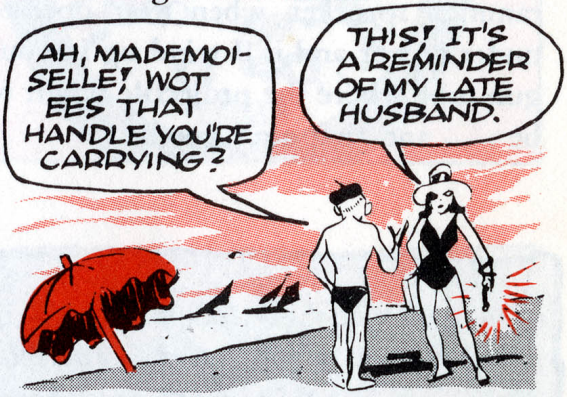

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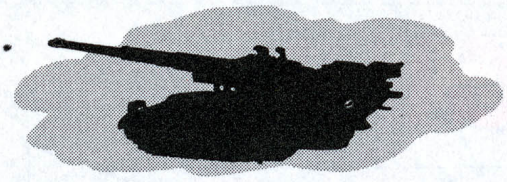
M107 RAMMER ROUTINE



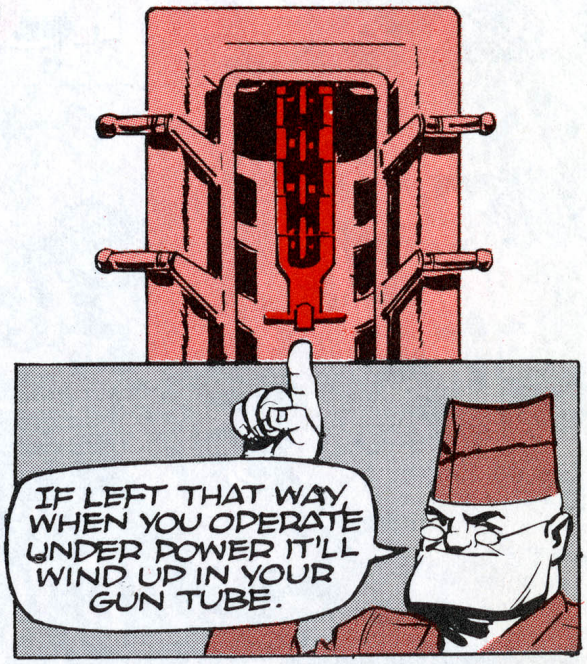
Been having any trouble with the rammer chain on your M107 SP 175-mm gun or M110 SP 8-in howitzer? Well you won't if you're careful where you put your bare feet when you cross the cow pasture.

When you're operating for real there's no sweat. It's only on dry runs that you have trouble when you check rammer operation without a projectile in the rammer.

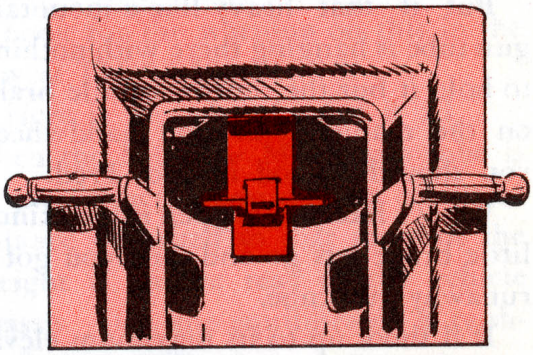
If you want to play it cool there's just one simple rule—after you've run the rammer manually, be sure you get the rammer chain **fully** retracted before you operate the rammer under power.

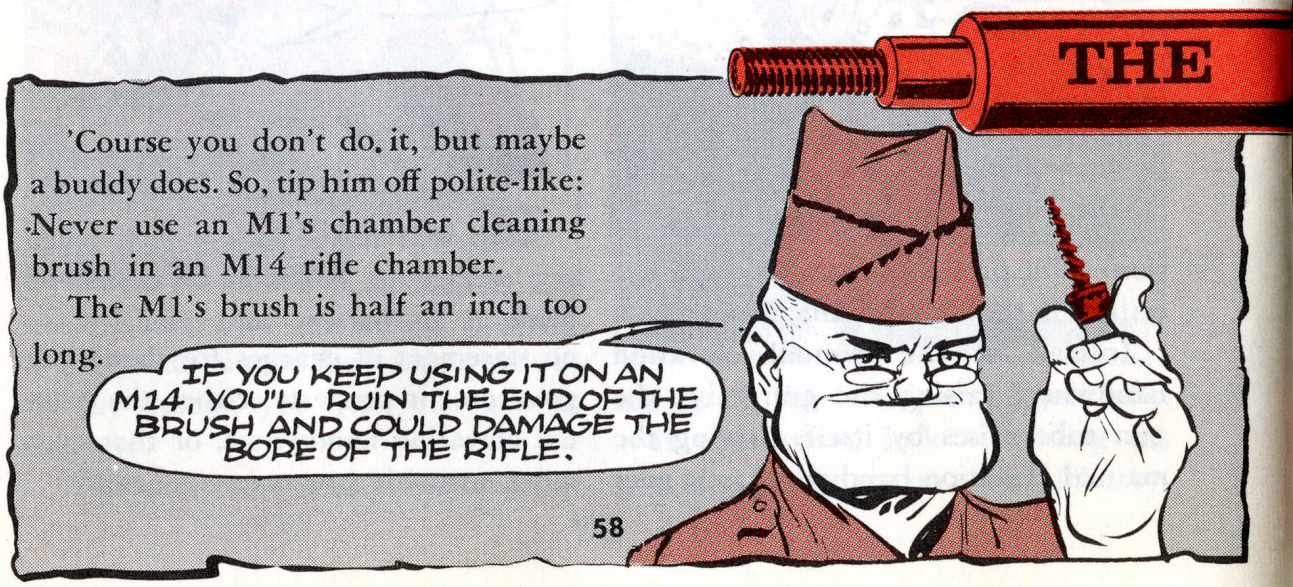
What will happen if you don't? . . . well, the chain will be thrown off the rammer sprocket when you operate under power and it'll wind up in your gun tube where the projectile ought to be . . . and that ain't good!

RAMMER EXTENDED



RAMMER RETRACTED





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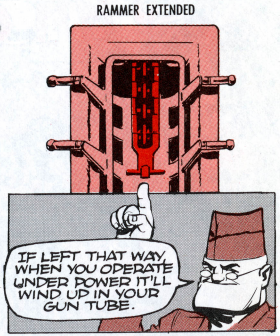
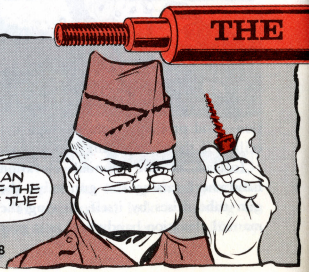


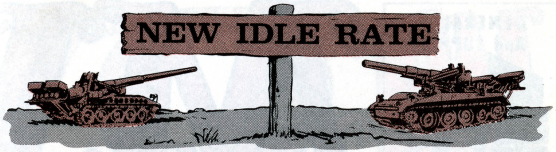
THE RIGHT BRUSH

'Course you don't do, it, but maybe a buddy does. So, tip him off polite-like: Never use an M1's chamber cleaning brush in an M14 rifle chamber.

The M1's brush is half an inch too long.



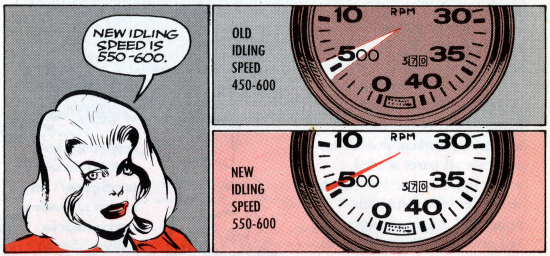
NEW IDLE RATE



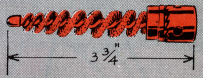
No, Clyde, the title has nothing to do with news about unemployment . . . it's a new engine idle speed for the M107 SP 175-mm gun family which also includes the M110 SP 8-in howitzer, the M109 SP 155-mm howitzer, and the M108 SP 105-mm howitzer.

TM 9-2300-216-10 (Jun 62) for the M107 and M110 says on page 21 that the idling speed is 450-600 RPM.

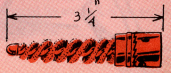
But The Word now is that engine idle speed is to be adjusted to 550-600 RPM because a higher idle seems to work better with these compression-ignition type engines.



Here's the right brush for each weapon:

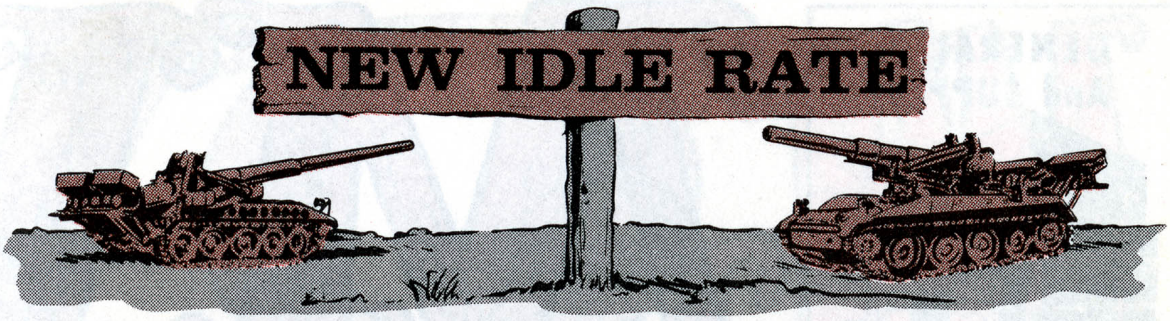


M1 rifle—FSN 1005-691-1381 (7790582) . . . 3¾-in overall



M14 rifle—FSN 1005-690-8441 (7990463) . . . 3¼-in overall

NEW IDLE RATE



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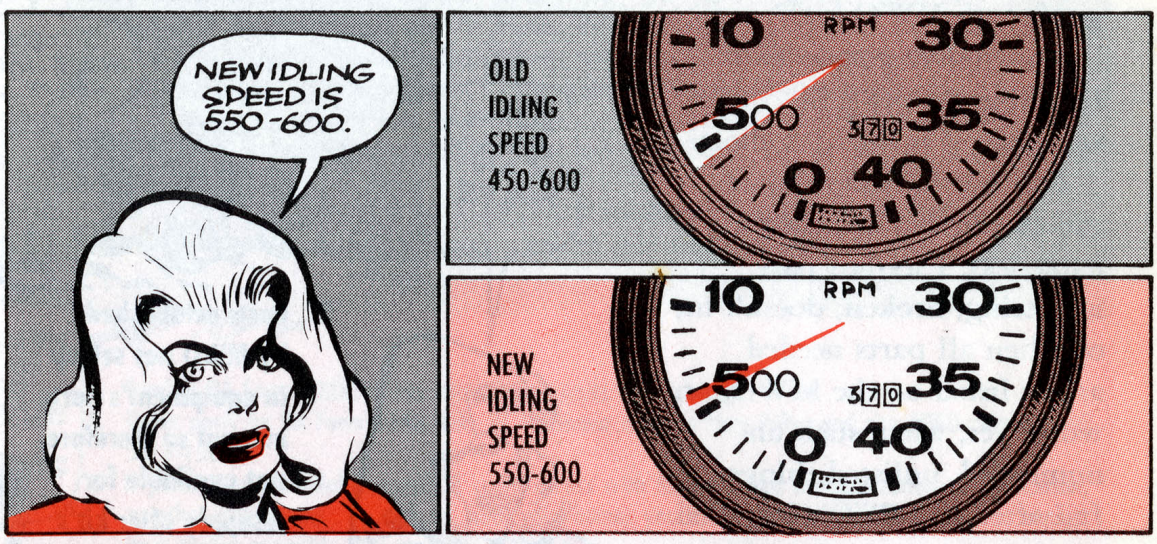

RIGHT BRUSH

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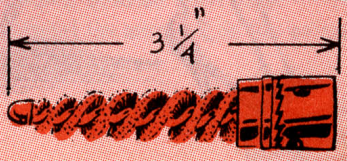


MWO

Stuck with a goofed up MWO kit??

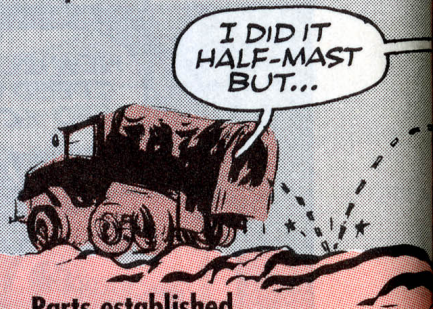
And you've got no FSN (or other supply info) on whatever it is the kit's short?

Fret not. Here are some things you can do when a name-less, FSN-less part is missing, broken, doesn't fit, or when all parts needed aren't listed on the MWO, or, worse yet, when such un-numbered, unlisted things, fail after an MWO's installed.

TROUBLE-SHOOTIN'

The Goof

1. The MWO doesn't list all parts needed.



2. Parts established by MWO not set-up in equipment's parts manual so therefore, not available for resupply after kit's been installed.

3. Parts in MWO kit are missing or damaged.

4. Some parts in kit don't fit, can't be used.

MWO JAM

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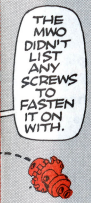
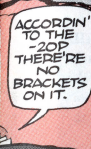
A FOULED-UP MWO KIT



Your Follow Through

a. First send in a DA Form 2028 on the publication itself.
   Then report the faulty kit on an EIR (DA Form 2407). See TM 38-750, Change 1, para 31d. Give all details on kit (contract number, manufacturer, date and from where received, etc.). List number of faulty kits on hand. Describe missing items fully (send sketch and/or measurement info if it'll help describe what's needed). Explain that you're asking your supply for items.
b. Then order missing parts on DA Form 1546. Although some may be common hardware type things, give all identification on hand, measurement info, etc. Be sure to quote MWO number and SB 9-150 (28 Jun 57) "Requisitioning of Repair Parts and Assemblies added by MWO's," **whenever** the SB applies.
c. If what's needed isn't available you'll have to cannibalize or make the items. Supply'll clue you in on this (depending on your supply need and your maintenance can do).



a. Send in DA Form 2028 on the equipment's parts manual (-P).
b. Order parts on DA Form 1546. Like in 1b above describe item fully, and cite MWO number and SB 9-150.
c. If parts aren't available supply'll come across with help through cannibalization or fabrication, or other instructions . . . such as, hold your horses you'll be notified when available, or request next higher assembly.

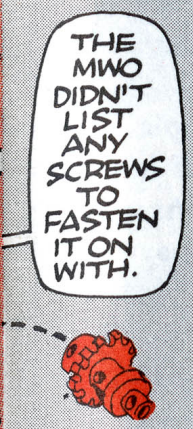
a. Ask for 'em on a DA Form 1546. Describe 'em fully. Cite MWO number and SB 9-150.
   Also quick-like dispatch an EIR (DA Form 2407) on the MWO kit, like in 1a above.
b. If support can't provide, items will have to be made or cannibalized. Or support may ask you to turn-in the faulty kit and request another one.

a. Send in DA Form 2028 on the MWO itself.
   Fire in an EIR (DA Form 2407) on the kit like in 1a above.
b. Tell support your kit problem, and request needed parts on a 1546. Describe parts fully.
c. If the right parts aren't to be had (through supply or local purchase) the answer'll be like before, make 'em or cannibalize 'em.

25 MORE

YOU AM

A FOULED-UP MWO KIT

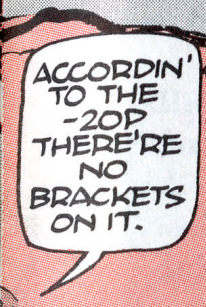


Your Follow Through

a. First send in a DA Form 2028 on the publication itself.
Then report the faulty kit on an EIR (DA Form 2407). See TM 38-750, Change 1, para 31d. Give all details on kit (contract number, manufacturer, date and from where received, etc.). List number of faulty kits on hand. Describe missing items fully (send sketch and/or measurement info if it'll help describe what's needed). Explain that you're asking your supply for items.

b. Then order missing parts on DA Form 1546. Although some may be common hardware type things, give all identification on hand, measurement info, etc. Be sure to quote MWO number and SB 9-150 (28 Jun 57) "Requisitioning of Repair Parts and Assemblies added by MWO's," **whenever** the SB applies.

c. If what's needed isn't available you'll have to cannibalize or make the items. Supply'll clue you in on this (depending on your supply need and your maintenance can do).



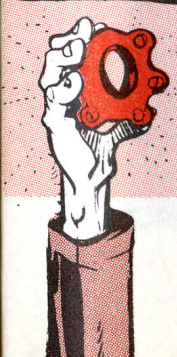
a. Send in DA Form 2028 on the equipment's parts manual (-P).

b. Order parts on DA Form 1546. Like in 1b above describe item fully, and cite MWO number and SB 9-150.

c. If parts aren't available supply'll come across with help through cannibalization or fabrication, or other instructions . . . such as, hold your horses you'll be notified when available, or request next higher assembly.

a. Ask for 'em on a DA Form 1546. Describe 'em fully. Cite MWO number and SB 9-150.
Also quick-like dispatch an EIR (DA Form 2407) on the MWO kit, like in 1a above.

b. If support can't provide, items will have to be made or cannibalized. Or support may ask you to turn-in the faulty kit and request another one.



a. Send in DA Form 2028 on the MWO itself.
Fire in an EIR (DA Form 2407) on the kit like in 1a above.

b. Tell support your kit problem, and request needed parts on a 1546. Describe parts fully.

c. If the right parts aren't to be had (through supply or local purchase) the answer'll be like before, make 'em or cannibalize 'em.

P.S. MORE

How a "wronged" kit gets straightened-out may often depend on the MWO itself—its priority, the type of equipment it covers, the gravity of the goof, how many kits are faulty, how many kits are in stock, etc.

No matter what happens, never discard a fouled-up MWO kit. Hang on to it, but don't sit on it, either. Report your problem soonest. The MWO-makers (and the materiel readiness planners and the supply wheels) are countin' on and need your immediate word in this kind of foul-up.

Your report gets the right people checking into things where the stuff is put together, and also broadcasting fix-up info (as needed) to others who may be in your fix.

Another good reason for quickly reporting problems with MWO kits is so's you'll not miss out on whatever "no-cost" time limit may be tagged on to the MWO kit.

Remember, also, that under MILSTRIP (AR 725-50) your supply support can order non-FSN'd items under the "exception code". Just tell support your problem and clearly describe the item needed on your requisition.

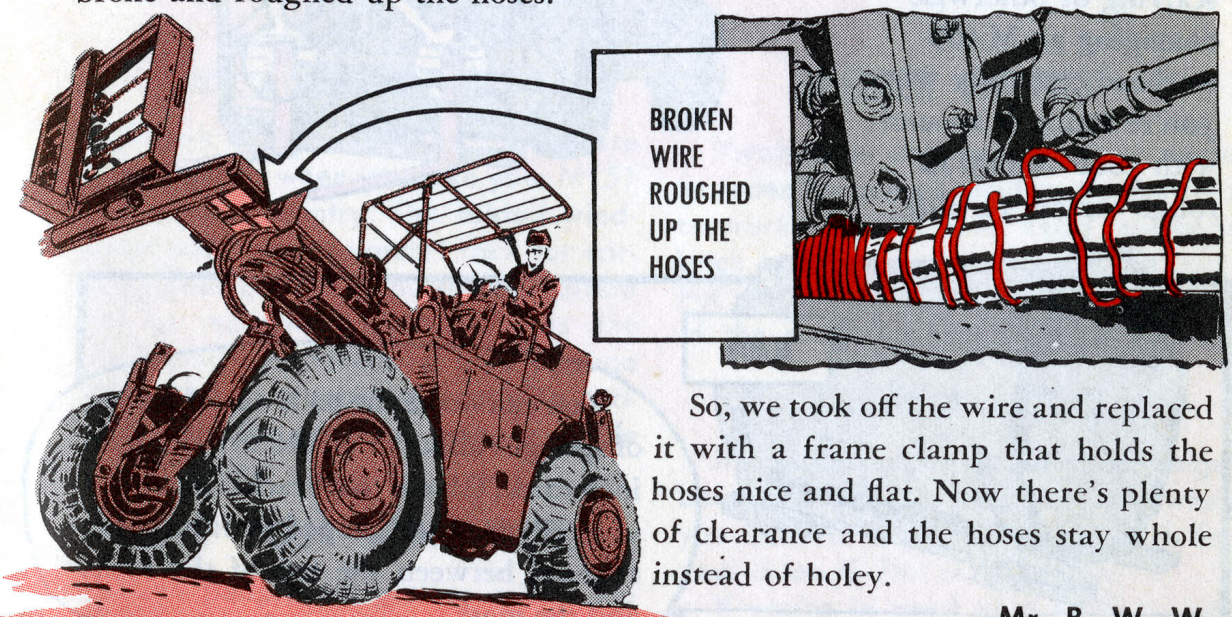
You know, of course, that when an FSN'd item in an MWO needs replacing, normally, all you have to do is quote the MWO number (and SB 9-150) on your DA Form 1546. But even with FSN'd items, when they're not in supply or available through local purchase, the resupply will be . . . yep, through cannibalization or fabrication.

HOSE HOLDER

Dear Editor,

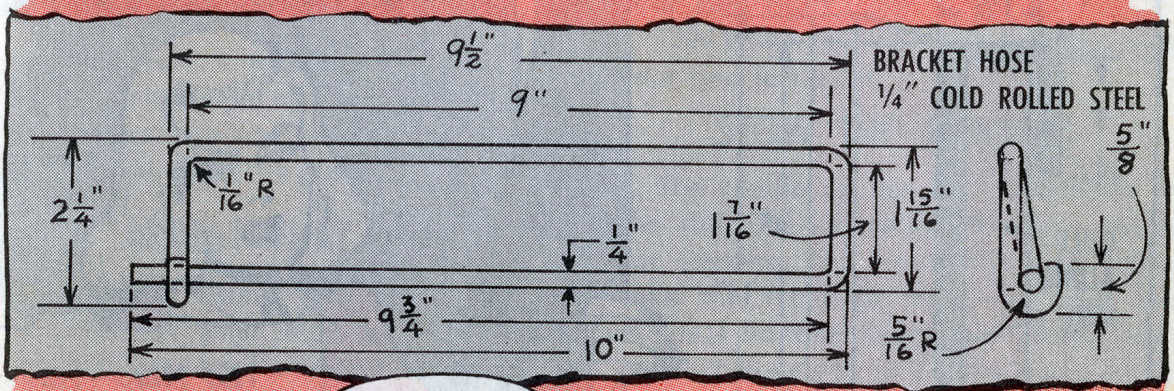
When the 10,000-lb rough terrain forklifts first hit our unit, it didn't take long to see why so many hydraulic hoses were getting chopped and beaten up. Trouble was the hoses were held together by a piece of soft aluminum wire . . . a bulky arrangement, to say the least.

When we lowered the forks, the frame cut into the hoses. And when we extended the forks while they were lowered to a certain position, the wire broke and roughed up the hoses.



So, we took off the wire and replaced it with a frame clamp that holds the hoses nice and flat. Now there's plenty of clearance and the hoses stay whole instead of holey.

Mr. B. W. W.
Fort Story, Va.

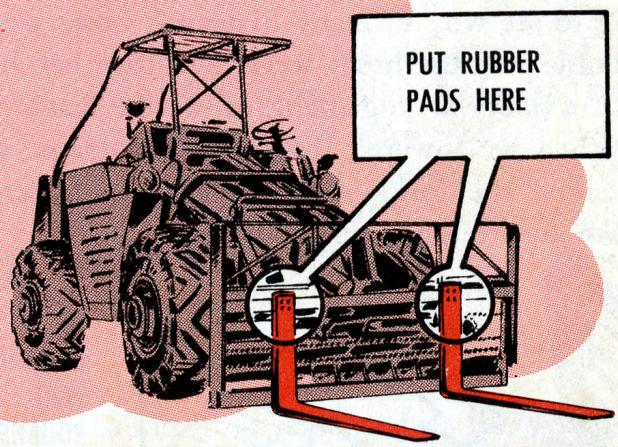


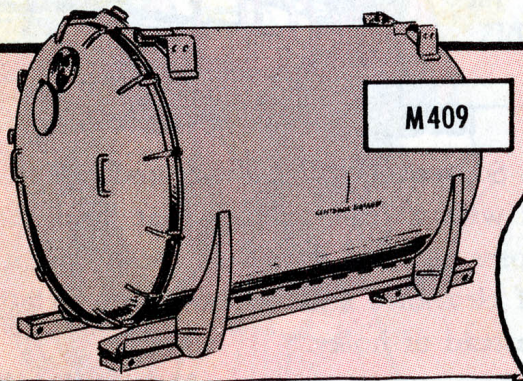
(Ed Note—Good thinking, Sir. Here's how the QM types solved the same nasty problem. They made a hose clamp out of ¼-in cold rolled steel, like so and replaced the wire jobs thisaway.)

PADDED CELL

Dear Editor,

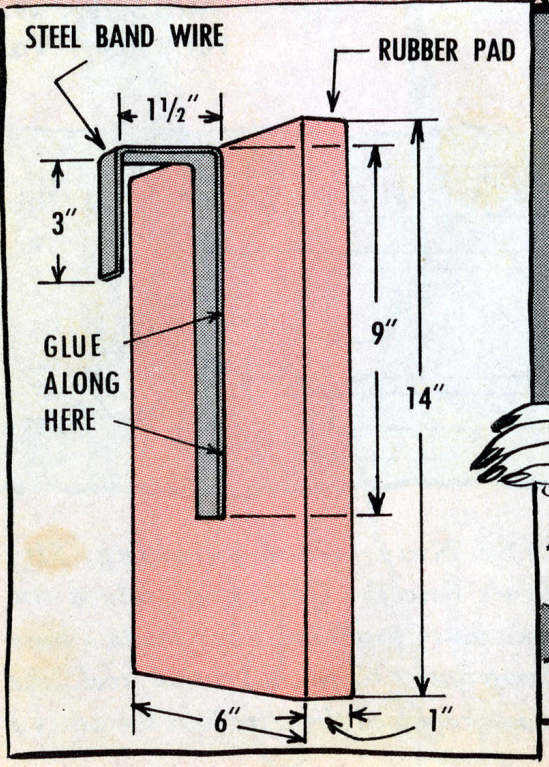
Put a rubber pad on each fork and you won't have to worry about denting, scarring or otherwise damaging an M409 warhead container when you're toting it around with your 10,000-lb rough terrain forklift.





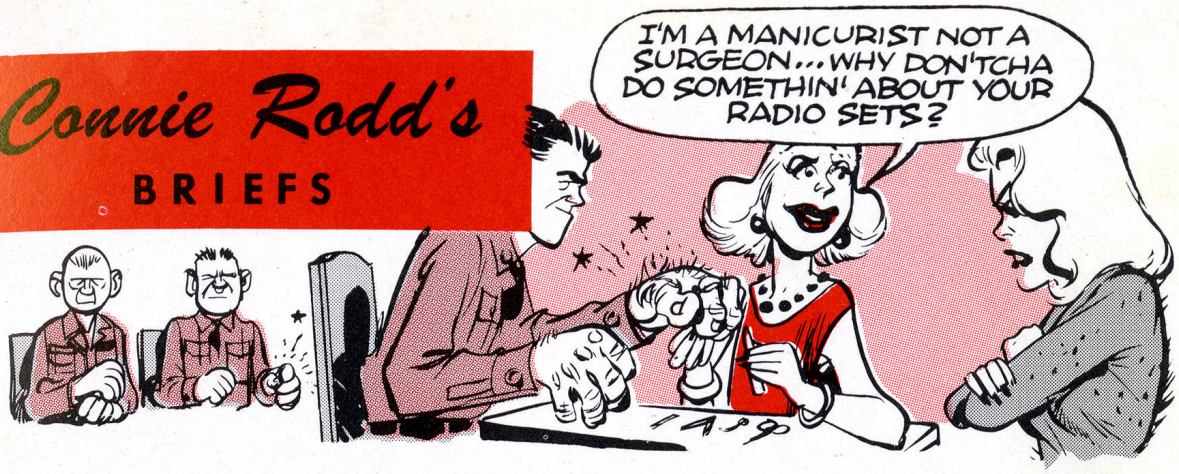
You can make the pads out of a piece of sponge rubber or an old tire about an inch thick. Glue it to a bracket made out of steel wire band shaped to fit into that channel between the top of the forks and the mast.

"C Btry Untouchables"
Fort Hancock, New Jersey



(Ed Note—Anything that'll keep these costly containers from getting beat up is worth its weight in gold.)

Connie Rodd's BRIEFS



NO LUGGAGE RACK

There's a big temptation right before your eyeballs when you take your M151 ¼-ton cross country. The folded windshield looks like a natural rack for carrying your gear. Of course, the current run on replacement glass proves the windshield wasn't meant to be a luggage rack. And no amount of wrapping protection for the gear will make it usable as one, either.

SIGHT YOUR SIGHT PLUGS

Some people are getting a little too handy with the paint spray. The sight indicators on the road and idler wheels of the M113 PC get painted over so you can't see the oil level. This is strictly from no goodville. Check your M113 and be sure you can sight all the sight indicators. That way you can be sure the oil level is halfway up in the glass.

ARREST THAT SPARK

Need a flame and spark arrester muffler for your M52 or M246 5-ton truck? If you haul ammunition you should have one. Order it as Muffler, Exhaust: flame and spark arrester (31007-147-822R91). The FSN is 2990-294-2257 and it's listed as Item 3 on page 38 of TM 9-2320-211-20P (March 1963).

SHELTER CHUCKS

Turnbuckles and tie-downs are made to order for commo shelters transported on trucks, but for some extra insurance latch onto a coupla' 4 x 4-in timbers. Put one on the truck bed on each side of the shelter. Keeps it from shifting.

CATCH A LATCH

It's no longer necessary to scrounge, borrow or dig into a salvage pile when you need a hood side panel latch for your 5-ton G-744 series trucks.

If you're in need of a latch . . . or catch, get 'em with these numbers:

FSN 2540-709-5879 for CATCH, left rear and right front.

FSN 2540-753-9222 for CATCH, right rear and left front.

STOW THE HANDSET

The cradle on the R-417 receiver of the AN/TRC-24 radio set wasn't made for rocking. So, next time you gotta take the Track-24 for a ride, lift the H-90/U handset from that cradle, disconnect the cord, and store the handset in the accessories case (CY-1342). You won't rock the H-90 off the cradle that way, and you'll keep it from getting damaged—or damaging components of the radio set.

Would You Stake Your Life right now on the Condition of Your Equipment?

USING LIGHT-WEIGHT OIL?
IN WINTER WHEN YOU'RE USING LIGHT-WEIGHT OIL
CHECK LEVEL OFTEN
DANGER! LIGHT-WEIGHT OIL IS USED MUCH FASTER IN ENGINES...SO KEEP AN EYE ON YOUR DIPSTICK- OR YOU'LL BURN OUT YOUR ENGINE!